CHAPTER I. INTRODUCTION

Part 1. Description of the Highlands Region

The New Jersey Highlands Region

The New Jersey Highlands Region (Highlands Region) is an area of 859,358 acres located in the northwest part of the State (see figure Highlands Region). The Highlands Region includes eighty-eight municipalities and parts of seven Highlands counties – Bergen, Hunterdon, Morris, Passaic, Somerset, Sussex, and Warren. The Highlands Region offers stunning vistas of an ancient landscape and serves as a vital source of drinking water for over half of New Jersey residents. Highlands Region residents and visitors appreciate this special resource area of the State for its natural beauty and environmental significance as it stretches from Phillipsburg, Warren County in the southwest to Mahwah, Bergen County in the northeast.

In the Highlands Water Protection and Planning Act (Highlands Act), the Legislature designated specific boundaries within the Highlands Region as the Preservation Area and the Planning Area. The fundamental distinction between the Preservation and Planning Areas is that municipal and county conformance with the Regional Master Plan is required in the Preservation Area and is voluntary in the Planning Area.

Environmental And Land Use Setting

The Highlands Region serves as a significant green belt along the East Coast's metropolitan areas. Noted for its scenic beauty and environmental significance, the Region displays myriad geographic and geologic features, including rolling hills, pastoral valleys, steep ridges, diverse forests, and critical wildlife habitats. The Highlands Region has endured extensive periods of gradual uplift and erosion. As a result, ridges are typically underlain by older rocks that are less susceptible to erosion. Stream valleys generally follow along fractured zones and faults, or along areas of softer rocks that weather and erode faster. An irregular escarpment, averaging 500 feet in height, extends from Franklin Borough, Sussex County, through Andover Township, Sussex County, to the Delaware River north of Phillipsburg, Warren County. This escarpment forms the Highlands’ northwestern boundary with the Valley and Ridge Province. To the southeast, major faults separate the Highlands’ erosion-resistant bedrock to form another prominent escarpment running from Mahwah Township, Bergen County, to Peapack-Gladstone Borough, Somerset County, to the Delaware River near Milford Borough, Hunterdon County. This rift marks the Highlands boundary with the Piedmont Province.

Part 2. History of the Highlands Region

Early History

The natural environment has evolved gradually since the final retreat of the Wisconsinan Glacier around 10,000 BC. After the retreat, the Highlands contained tundra-like vegetation which, over time, succeeded to grasslands and eventually to forests that dominate the Highlands Region today. Although Highlands’s forests were regularly harvested after European settlement, slightly more than half of the Region is currently forested.

Since the terminal moraine of the glacier was located south of the present day location of Route 80 - between Morris and Warren Counties - differences exist in the topography and soils between the northern and southern portions of the Highlands. The northern portion has steeper slopes, is rockier, and has narrower valleys than the southern portion. South of where the glacier ended, the soils are richer and better suited for agriculture.
Farming has been part of the Highlands since its earliest recorded history. The most productive early farms were in the low fertile valleys. The earliest farmers consumed much of their own food production or fed it to their livestock. Staples included dairy products, grain, fruits and vegetables. Farmsteads typically consisted of a main house, various types of barns for animal shelter, feed storage structures, fields, orchards and independent water sources. These farms and fields were often enclosed and enhanced by natural, wooden or stone fence lines conveying a sense of independence and distinction.

Early on the key industry of the Region was ironworks. Factors contributing to this industry included the Region’s geology and the availability of natural resources. The Highlands was found to contain one of the richest iron oxide deposits in the world. Iron oxide, also known as magnetite, is an iron ore with the highest iron content. The area also had readily available sources of water and lumber which were needed to process the raw ore into metallic products. The Mount Hope Mine in Rockaway Township, Morris County is believed to be one of the oldest and largest iron mines in the United States, dating back to 1710. It yielded close to 6 million tons of iron ore during more than 250 years of operation.

The onset of industrialization brought many changes to the Highlands Region. People settled in a more permanent fashion since many employees were needed to run the ironworks operations. The communities that sprouted up around the industries included structures for housing, work (e.g. mills, offices), civic activities (e.g. churches, schools), and commerce (e.g. stores, inns). Significant structures related to the ironworks industry included furnaces and forges. These ruins may be seen in several Highlands towns today.

Dramatic changes to the natural environment also took place during this era. Initially, ore was extracted from surface rock, but over time numerous sub-surface mines were established throughout the Highlands. A reliable water supply was needed since water power was used in the operation of many iron mines. Additionally, charcoal was used as a fuel source to fire the industry’s furnaces and forges. The vast forests of the northern Highlands provided an abundant source of timber for producing charcoal, leading to nearly total clearcutting of the forests over time.

Industrialization of the area demanded better transportation networks to move raw materials and goods. Transportation advancements occurring during this period included the construction of the Morris Canal and expansion of railroads. The Morris Canal was completed in 1830 to connect Newark and the Hudson River to the Delaware River. The canal prevented the early demise of the iron industry in New Jersey by providing coal from Pennsylvania as a source of fuel for the forges. Coal was shipped to the Highlands to supplement the waning Highlands timber supply. Railroad expansions that followed enhanced the ability to transport fuel and processed iron.

Increased agricultural use of the Highlands accompanied the industrialization of the Region. Remarkably similar in overall size and appearance to the earliest farms, many farmsteads in the mid 19th to early 20th century continued to prosper by adapting their crops to provide daily dairy products and seasonal produce for the massive markets of the metropolitan New Jersey/New York area. The late 19th and early 20th centuries witnessed a gradual and gentle transformation of parts of the agricultural landscape as commercial farming enterprises metamorphosed into the country estates of the upper middle class. Initially this trend was encouraged by easy rail access to Manhattan, and was later reinforced by an improved roadway network. The number of farms decreased noticeably in the Highlands region in the mid- and late 20th century due to post-World War II suburban development. However, some areas of the Highlands Region still are dominated by agriculture.

**Significance of the Highlands Region**

The value of the Highlands Region has been recognized and studied by both State and federal agencies for over 100 years. Of particular importance are: the creation of reservoirs in the Highlands for cities of northern New Jersey; the findings of the New Jersey Potable Water Commission report issued in 1907; the establishment of the North Jersey District Water Supply Commission; the United States Department of Agriculture Forest Service study conducted in 1992 and updated in 2002; and the recommendations of the 2003 New Jersey Highlands Task Force.
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Newark Watershed and Reservoir Development

By the mid-1800’s, Newark was a major industrial center in New Jersey. With a prime location that included port facilities, a good roadway network, the Morris Canal, and new railroad access, Newark attracted many lucrative businesses that employed numerous local residents, but also contributed to regional pollution of Newark’s primary water supply, the Passaic River. In 1879, the City of Newark looked to the pristine waters in the hills of Passaic County and the Pequannock River for a new, long-term supply of clean drinking water based on five reservoirs. Over time, Newark purchased additional land in the drainage basin to protect the source of their drinking water. The City of Newark currently owns over 86 percent of the lands in the Pequannock watershed. Jersey City also built two reservoirs in the Rockaway River watershed in the early 1900’s for water supply, but did not make extensive land purchases in what was already an industrialized and populated river valley.

In the early 1920’s, Newark sought to create another dedicated water supply source along the Wanaque River located in the Highlands. However, the New Jersey Legislature decided instead to create the North Jersey District Water Supply Commission to serve a consortium of municipalities, including the City of Newark, to address the communities’ water supply needs. Construction of the 29 billion gallon Wanaque Reservoir was completed in 1930. The final large reservoirs built to store Highlands Region water were the Spruce Run and Round Valley reservoirs in the Raritan River Basin and the Monksville Reservoir just upstream of the Wanaque Reservoir (see figures Areas Served Outside of the Highlands Region and Source Water Protection Areas and Reservoirs).

1907 Potable Water Commission Report

On March 7, 1906, New Jersey Governor Edward C. Stokes approved Joint Resolution No. 2 of the Senate and General Assembly establishing a five-member commission “to investigate the practicability and probable cost of the acquisition by the State of the title to the potable waters of the State.” The Potable Water Commission’s task was to examine the extent, character, ownership and value of the State’s potable water supplies.

The Commission’s 1907 findings acknowledged the uneven distribution of potable water sources throughout the State. The report indicated that, while an abundant natural supply of potable water may be available, the people of the State had the responsibility to use it wisely and prevent it from contamination for the existing population and future generations. The Commission noted the importance of the Highlands watersheds in its report explaining:

> The Highlands watersheds are the best in the State in respect to ease of collection, in scantiness of population, with consequent absence of contamination; in elevation, giving opportunity for gravity delivery and in softness as shown by chemical analysis. These watersheds should be preserved from pollution at all hazards, for upon them the most populous portions of the State must depend for water supplies. There has been too much laxness in the past regarding this important matter.

The report suggested that the State acquire lakes or ponds over 100 acres in size for the purpose of public recreation such as boating and fishing in order to keep them accessible for the public use. In particular, the Commission highlighted lakes in Sussex, Morris and Warren Counties for their pristine waters and scenic beauty for recreational purposes. While the Commission’s report promoted the development of water supply management in New Jersey over the next century, and some land preservation occurred through the New Jersey Green Acres program, local and land trust initiatives, focused governmental action focusing on protecting the Highlands was not taken until the end of the century when the federal government became involved.

United States Forest Service Study

Federal involvement with the Highlands Region began in 1990 with the passage of the Food, Agriculture, Conservation, and Trade Act of 1990, which authorized the Secretary of Agriculture “…to conduct a study of the region known as the New York-New Jersey Highlands…” The study’s objectives were to:
Water Supply to Areas Outside the Highlands Region

Legend

Areas Served by Highlands Water
Percent Supplied
- None
- >0 - 25%
- 25% - 50%
- 50% - 75%
- 75% or Greater

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Highlands Planning Area
- Highlands Preservation Area

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Sources:
- New Jersey Highlands Council, 2006
- New Jersey Department of Environmental Protection, 2006
define the physiographic boundaries of the Region;
- identify forest, ecological and economic resources;
- identify historical land ownership patterns;
- indicate the likely impact of change;
- propose alternative conservation strategies; and
- provide the opportunity for public comment.

As a result of the study, the U.S. Forest Service (in cooperation with New York and New Jersey representatives) issued a report in 1992. The U.S. Forest Service study served as a significant impetus to reigniting the effort to protect the critical natural resources of New Jersey’s Highlands Region. The New Jersey Highlands Region is part of the four-state Highlands system consisting of over 3.5 million acres of land including portions of Connecticut, New York, New Jersey, and Pennsylvania. The federal Highlands Conservation Act enacted in 2004 envisioned $100,000,000 for land preservation in the four state region (see figure Federal Highlands Conservation Act Boundary).

The 1992 New York-New Jersey Highlands Regional Study (1992 Study) analyzed approximately 1.1 million acres of ridges and valleys from the Hudson River in the east to the Delaware River in the west, encompassing a study area that included portions of two counties in southern New York State and seven counties in the northwest part of New Jersey.

The U.S. Forest Service identified unprecedented development pressure from commercial, industrial and residential uses in the study area and concluded that this pressure was causing the loss of natural and cultural heritage, agricultural lands, wildlife habitat, and recreational opportunities, in addition to deteriorating the air quality and the quality of the region’s drinking water supplies. The 1992 Study stated that “[t]hese changes place the extraordinary and essential resources of the Highlands at risk.”

The results of the 1992 Study, which were later reiterated in a 2002 update, listed five major goals to protect the region’s water resources:

- Goal 1: Manage future growth compatible with the region’s ecological constraints;
- Goal 2: Maintain an adequate supply of quality water;
- Goal 3: Conserve contiguous forests;
- Goal 4: Provide appropriate recreational opportunities; and
- Goal 5: Promote economic prosperity that is compatible with goals 1-4.

The 1992 Study examined the following resources in a regional context: forest resources, groundwater, surface water, fish and wildlife, recreation, agriculture, biological communities, threatened and endangered species, geophysical characteristics, air quality, cultural resources, forest land ownership and forest losses, and population growth and land use change. The 1992 Study concluded that there would continue to be negative impacts on the region’s natural and cultural resources unless numerous conservation measures were employed.

The conservation measures recommended in the 1992 Study included:

- Education – information distribution and user education - educational practices that seek to improve the environment and quality of life.
- Land Acquisition - including practices regarding the purchase, lease or donation of land, or any interest in land, in order to secure a public benefit.
- Planning - including all practices that employ the principles of planning and design, project review, and land and resource regulation.
- Incentives - including financial or other benefits to landowners that employ land management strategies that produce some public benefit.

The 1992 Study also discussed many ownership and transfer of title options including, but not limited to, fee simple acquisition, conservation easement, outright land donation and land exchange. Funding options
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Sources:
New Jersey Highlands Council, 2006
USDA Forest Service, 2005
discussed in the 1992 Study included, but were not limited to, federal and state cost sharing programs, general fund appropriations, and private money donations.

In 2002, the U.S. Forest Service conducted an update of the 1992 Study. The 2002 Update expanded the study area to encompass other essential at risk lands to the Connecticut border and parts of two additional New York counties. Together, these additions increased the study area to approximately 1.5 million acres. As in the 1992 Study, the U.S. Forest Service explained that the expanded study area is of national significance because it contains large areas of public open space, provides quality drinking water for millions of New York and New Jersey residents, has numerous and large areas of wildlife habitat, is an integral part of the Appalachian Mountain chain, and is an historical link for both the American Revolutionary and Civil Wars.

The 2002 Update documented an overall 11% increase in population from 1990-2000. Revising the 1992 Study’s conclusions to reflect this increase, the U.S. Forest Service ran various development scenarios to determine the possible extent and pattern of changes to the Highlands landscape over time. The scenarios illustrated the consequences from the likely market reactions to the zoning laws and regulations in effect at that time. For example, the 2002 Update showed how much forest had been converted to developed areas and projected the likely future trends by examining how many houses could potentially be built under existing State laws and local zoning.

The 2002 Update also identified numerous conservation successes since 1992. These successes included, but were not limited to:

- Acquisition of 20,000 acres in Sterling Forest on the New York-New Jersey border; and 2,600 New Jersey acres and 847 New York acres protected through the USDA Forest Service’s Forest Legacy Program;
- Acquisition of 80,000 acres protected through state, county, local and private sector support for open space acquisition;
- Designation of the Highlands Region as New Jersey’s first Special Resource Area in the 2001 State Development and Redevelopment Plan; and
- Designation of the Highlands Region as a unique physiographic province in the New York State Open Space Plan.

Importantly, the 2002 Update reiterated a recommendation from the 1992 Study to “[e]stablish a permanent regional entity, a Highlands regional council, to oversee the planning and management of the 1.1 million acre Study Area.” The Forest Service emphasis on the necessity of implementing a holistic approach to preserving the complex ecological and social characteristics of the Highlands Region served as an impetus to establishing the New Jersey Highlands Task Force in 2003.

Highlands Task Force

On September 19, 2003, Governor James McGreevey issued Executive Order 70 establishing the Highlands Task Force (Task Force). The 19-member Task Force was charged with making recommendations to the Governor and Legislature regarding ways to protect and enhance the quality of life in the Highlands Region by addressing measures to preserve natural resources while simultaneously providing opportunities for economic growth. As a result of the recommendations of the Task Force, the Highlands Water Protection and Planning Act was enacted on August 10, 2004 and charged the Highlands Council with the important task of developing a Regional Master Plan for the Highlands Region.

Part 3. The Highlands Water Protection And Planning Act

The Highlands Water Protection and Planning Act (Highlands Act, P.L. 2004, c. 120), enacted on August 10, 2004, includes findings of the Legislature “that the New Jersey Highlands is an essential source of drinking water . . . for one-half of the State’s population, . . . that . . . [it] contains other exceptional natural resources such as clean air, contiguous forest lands, wetlands, pristine watersheds, and habitat for fauna and flora, [and that it] includes many sites of historic significance, and provides abundant recreational opportunities for the citizens of the State.” (Highlands Act at Section 2, hereafter “Section 2”).
The Legislature also recognized that the resources of the Highlands Region are a vital part of the public trust. It declared that the measures of the Highlands Act “should be guided, in heart, mind, and spirit, by an abiding and generously given commitment to protecting the incomparable water resources and natural beauty of the New Jersey Highlands so as to preserve them intact, in trust, forever for the pleasure, enjoyment, and use of future generations.” (Section 2). The Highlands Act seeks to protect the Region’s public trust resources through a “comprehensive approach,” including the immediate imposition of stringent water and natural resource standards in the Preservation Area, a reorganization of land use powers to emphasize regional planning for the entire Highlands Region, and a “strong and significant commitment of the State to fund the acquisition of exceptional natural resource value lands.” (Section 2).

In the Highlands Act, the Legislature designated specific boundaries of the Preservation Area and found that “because of the imminent peril that the ongoing rush of development poses for the New Jersey Highlands, immediate, interim standards should be imposed on the date of enactment in the Preservation Area.” (Section 2). The Preservation Area consists of nearly 415,000 acres located in fifty-two municipalities within the seven Highlands Counties. The lands within the Preservation Area were subject to the immediately effective standards in the Highlands Act and are governed by rules and regulations subsequently adopted by the New Jersey Department of Environmental Protection (NJDEP). The Highlands Act established detailed and stringent standards for the NJDEP rules to protect the Preservation Area resources, with some provision for relief for redevelopment, brownfields development, and development based on the issuance of permit with waiver or qualification for one of the 17 exemptions. The Planning Area consists of nearly 445,000 acres located in eighty-three municipalities. There are five municipalities that lie entirely within the Preservation Area, 47 municipalities that have land in both the Preservation and Planning Areas and 36 municipalities that have land only in the Planning Area (see table Acreage of the Highlands Region in Municipalities and Counties).

Part 4. The Highlands Regional Master Plan

Through passage of the Highlands Act, the New Jersey Highlands Water Protection and Planning Council (Highlands Council) was created and charged with the important task of developing a Regional Master Plan to restore and enhance the significant values of the abundant and critical resources of the Highlands Region. The Highlands Council is an independent agency of the State of New Jersey and consists of fifteen members whose powers, duties, and responsibilities are set forth in Section 6 of the Highlands Act. The Act establishes a fundamental goal to protect, restore and enhance water quality and water quantity in the Region and includes important goals relating to the protection of agricultural viability, ecosystems, species and communities, as well as scenic and historic resources.

In the face of the growing challenge of protecting New Jersey’s finite drinking water supply and providing for the needs of a growing human population, the continued loss and fragmentation of the remaining lands that
serve as the source of that water supply is no longer tenable. Accordingly, a major purpose of the Regional Master Plan is to “determine the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain.” (Section 11.a.(1)(a)). The Regional Master Plan provides the basis to determine the capacity of the Highlands Region to accommodate appropriate economic growth while ensuring the sustainability of the resources in the Region.

The Regional Master Plan seeks to evaluate how best to protect the natural and cultural resources of the Highlands Region while striving to accommodate a sustainable economy – the core of smart growth principles. The Regional Master Plan establishes the capacity limitations for future growth within the Highlands Region related to both natural systems, such as protection of our drinking water supplies, and the built environment, such as wastewater and transportation infrastructure. The Regional Master Plan evaluates the costs, and often unintentional consequences, of local land use planning decisions, assesses the environmental and economic benefits of natural resource and open space protection, particularly as they relate to water supply, and further develops the tools and methods necessary to institute growth control measures, where necessary, to safeguard critical natural resources. (see figures Lakes, River and Streams and Forested Areas)

In order to integrate the environmental, social and economic goals of the Highlands Act, the Regional Master Plan provides a consistent framework upon which to base future land use decisions in a manner that fosters regional cooperation and community participation. It promotes a regional perspective while encouraging community-based planning that is both scientifically defensible and necessary.

The Regional Master Plan embodies a regional vision for the Highlands Region and will be implemented at all levels of government. Through conformance by municipalities and counties, financial and technical assistance by the Highlands Council, and State and federal coordination, the Regional Master Plan will provide for the protection and preservation of significant values of the Highlands Region for the benefit of the residents.

The Highlands Council is charged with developing and implementing a Regional Master Plan for the Highlands Region. The primary goal of the Regional Master Plan “shall be to protect and enhance the significant values of the resources thereof.” (Section 10.a.). The Highlands Act additionally sets forth specific goals for the Preservation Area and the Planning Area which are fully discussed in Chapter III.

The Highlands Act required that the Regional Master Plan include specific components that address the following issues:

**Resource Assessment**

- Determine the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain while still maintaining the overall ecological values thereof; and
- Assess the scenic, aesthetic, cultural, historic, open space, farmland and outdoor recreation resources of the Highlands Region, together with a determination of overall policies required to maintain and enhance such resources.

**Smart Growth Component**

- Assess, based upon the resource assessment, the opportunities for appropriate development, redevelopment, economic growth, and implementation of a Transfer of Development Rights (TDR) Program;
- Consider public investment priorities, infrastructure investments, economic development, revitalization, housing, transportation, energy resources, waste management, recycling, brownfields, and design such as mixed-use, compact design, and transit villages;
- Prepare a Land Use Capability Map;
- Identify existing developed areas capable of sustaining redevelopment;
- Identify undeveloped areas in the Planning Area, which are not significantly constrained by environmental limitations, are not prime agricultural areas, and are located near existing development and infrastructure, that could be developed;
CHAPTER II. ANALYSIS OF THE HIGHLANDS REGION

Part 1. Natural Resources

The New Jersey Highlands supports the greatest diversity of natural resources of any region of the State, with 70% of its lands classified as environmentally sensitive (Highlands Task Force Action Plan, March 2004). The biological diversity of the Highlands is comprised of an assemblage and linkages of diverse wetlands, streams and rivers, forests, wildlife habitats, and ridges and valleys. Active management, stewardship, and restoration on public and private lands are required to protect and enhance these critical resources.

The Regional Master Plan evaluates the effect of land development and other stresses on the natural and ecological resources of the Highlands Region, and establishes the overall strategies necessary to maintain and enhance their value. These resources include: a) Forest Resources; b) Highlands Open Waters and Riparian Areas; c) Steep Slopes; d) Critical Habitats; e) Open Space; f) Carbonate Rock Topography; and g) Lakes, Ponds and Reservoirs. These are each interrelated and interdependent systems and they are presented in an integrated ecosystem protection and management framework. The purpose of the ecosystem management analysis is to highlight areas of the Highlands Region with exceptionally high ecological values that should be conserved, those with lesser value that may be restored, and those previously impaired by past human activity that may be appropriate to support growth.

For many of the Region’s natural resources, the Highlands Council utilized a watershed-based assessment to evaluate resource integrity and protection needs. A watershed describes an area of land that drains down slope to the lowest point. Water moves through a network of drainage pathways, both underground and on the surface, and these pathways converge into streams and rivers, which become progressively larger (i.e., higher order) as the water moves downstream and the size of the contributing drainage area increases. The connectivity of the stream system is the primary reason for doing assessments at the watershed level. Because water moves downstream, any activity that affects the water quality, quantity, or rate of movement at one location can affect locations downstream. The watershed boundaries used for the analysis in the Regional Master Plan were 14-digit Hydrologic Units (i.e., subwatersheds or HUC14s). There are 183 HUC14 subwatersheds that are located partially or entirely within the Highlands Region.

Subpart a. Highlands Forest Resources

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Region, including the natural and the built environment. Forests provide essential ecosystem functions, including surface water filtration, which is important to protecting essential drinking water supplies for the Highlands Region and for the State as a whole. Forests serve as habitat for plants and animals and are critically important to the maintenance of biodiversity in one of the most populous states in the nation. In addition, when managed for sustainable use, forests can be a source of renewable wood products. Forests are a defining visible and functional feature of the Highlands and constitute a majority of critical habitat in the Region.

Protecting the integrity of Highlands Region forests is dependent on the maintenance of large contiguous forested areas and healthy forest stands. Large contiguous forest tracts have a higher degree of interior, or core, forest. Interior, or core, forest provides important ecological values. Core forest habitat is defined as a forest located more than 300 feet from altered land or a road. Approximately 44% of the total Highlands forest area is core forest habitat. It is important to note, however, that even these large contiguous areas may consist of many smaller parcels under individual ownership. In 2002, the average size of woodland under a single ownership was 10-20 acres. This presents a significant challenge in efforts to manage forest for sustained ecological and water quality benefits. Land use change within the Highlands Region has resulted in forest loss and reduction in important forest ecosystem functions and societal benefits. As forests are fragmented into smaller patches, the integrity of the remaining forest is more vulnerable to human-induced change.

Forest fragmentation results in the separation of forest tracts from each other and from larger blocks of forest. Many species are especially vulnerable to the reduction in habitat area caused by forest fragmentation, and they may disappear entirely from forest patches because food or other resources are inadequate to support them.
The reduction in species diversity within a forest can profoundly affect the ecosystem viability of the remaining forest. Fragmentation also reduces the movement of species that are reluctant or unable to cross non-forest areas and for those that depend on such species for dispersal. Reduced movement and dispersal increases the chance of local extinction of individual species. Even with the extensive forest areas contained within the Highlands Region, increased fragmentation of forest tracts is occurring due to land use alterations. This fragmentation results in quantifiable landscape level changes which include increased edge, reduced forest interior, increased number of patches, forest patch isolation, and reduced habitat area. In order to control further degradation of the Highlands forest ecosystem, effective forest protection mechanisms and sustainable management policies are essential.

Sustainable forestry also becomes more difficult as woodlot sizes decrease, particularly with increased suburbanization occurring around larger properties. Deer overabundance and introduction of non-native pest species are of significant threat to the Region’s forest. An overabundance of white tailed deer, in particular, is detrimental to forest health and regeneration due to over-browsing. Sustainable forest management on a regional basis, rather than a piecemeal approach for individual parcels, is crucial for the future integrity of Highlands forests.

In furtherance of the requirements and goals of the Highlands Act, and in order to determine the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain while maintaining the overall ecological values of contiguous forests and woodlands, the Regional Master Plan focuses on the following areas of action to address the need to protect forest resources and promote sustainable management practices within Highlands forests:

- Identify forest resources in need of protection;
- Develop resource protection measures;
- Develop measurable criteria and indicators to better assess the health and sustainability of Highlands forest resources; and
- Integrate protection, restoration, mitigation, and enhancement of forest resources into forest management and stewardship policies and plans.

The Highlands Council assessed the ecological integrity of forests through the examination of landscape level characteristics at the forest patch level and the subwatershed level, utilizing measures of forest fragmentation, to identify where regionally significant forests are located in the Highlands Region. These are the forests that are most suited to support ecological processes. The result of this assessment is the spatial delineation of the Forest Resource Area within the Highlands Region (see the figure Forest Resource Area). The Forest Resource Area includes high ecological value forest areas, including those forested areas that exhibit the least fragmentation and are vital for the maintenance of ecological processes. The Highlands Council spatially delineated the Forest Resource Area by including those forested areas that express one or more of the following indicators: a contiguous forest patch of equal to or greater than 500 acres in size; an area consisting of ≥250 acres of core forest area greater than 300 feet from an altered edge, or areas that include ≥45% of mean total forest cover and mean distance to nearest patch (HUC14 subwatershed only).

In addition, the Highlands Council assessed forest cover integrity in the Highlands Region at the subwatershed level. Forests are essential for the protection of water quality and quantity. To assess forest cover integrity at a subwatershed level, the Highlands Council assigned a value class to each of the 183 HUC14 subwatersheds in the Highlands Region based on the following classes for the Highlands subwatersheds:

- **High Integrity Forest Subwatershed** – A subwatershed that is predominantly forested, including a high proportion of forest cover consisting of high core area, large patch size, and a low distance to nearest patch;
- **Moderate Integrity Forest Subwatershed** – A subwatershed that is predominantly forested, but does not exhibit a high proportion of forest cover, core area or patch size and an increase in distance to nearest patch, and;
- **Low Integrity Forest Subwatershed** – A subwatershed that is predominantly non-forested or includes low values for proportion of forest cover and patch size, or a high distance to nearest patch.
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Each subwatershed within the Highlands Region was evaluated using these indicators of forest watershed integrity to identify forested subwatersheds that provide important water quality benefits (see the figure Forest Integrity Indicators by HUC14). The Forest Resource Area and the Forest Integrity Indicators will be used in this Plan to achieve the protection of forest areas in the Highlands Region.

The technical basis and additional background information on the forest area protection requirements can be found in the Highlands Council’s Ecosystem Management Technical Report.

Subpart b. Highlands Open Waters and Riparian Areas

The protection, enhancement and restoration of water resources is a fundamental goal of the Highlands Act. A primary mechanism to meet this goal is the assessment of surface water bodies, known as Highlands Open Waters, and lands adjacent to these waters, known as Riparian Areas. Highlands Open Waters are a critical public trust resource and an essential source of drinking water for the State. These surface waters and the associated riparian areas provide protection against floods and help to ameliorate the effects of prolonged droughts. They are also important habitat for numerous plant and animal species, including many rare, threatened, endangered species in the State. Highlands Open Waters and Riparian Areas provide a wealth of agricultural, recreational, and aesthetic uses for both residents and visitors alike, helping to contribute to a vibrant regional economy.

Highlands Open Waters include all springs, wetlands, intermittent or ephemeral streams, perennial streams, and bodies of surface water, whether natural or artificial, located wholly or partially within the boundaries of the Highlands Region. Riparian Areas are areas adjacent to, and hydrologically interconnected with, rivers and streams. They are areas that exhibit periodic inundation or saturation of soils, are subject to periodic flooding, and include wildlife corridors within 300 feet of a surface water feature. Riparian Areas serve as an interface between surface water bodies and terrestrial ecosystems and play a critical role in maintaining the quality and ecological integrity of Highlands Open Waters. Since Riparian Areas are directly related to the protection requirements of Highlands Open Waters, these two resources are presented together in the Plan.

The Highlands Region contains an extensive network of surface waters and associated riparian lands. The Highlands Council completed an inventory of the Highlands Open Waters within the Highlands Region (see the figure Highlands Open Waters). The total stream length mapped in the Highlands is 3,605 miles and the extent of mapped streams and lakes acreage is 32,213 acres. The total for mapped wetlands in the Highlands Region is 90,091 acres. The mapped Riparian Area (see the figure Riparian Area) is over two-fifths of the Highlands Region, emphasizing the importance of water related resources to the area.

1. Evaluation of Watershed Value

The Highlands Council utilized a watershed-based assessment to evaluate the integrity and protection needs of Highlands Open Waters at the HUC14 subwatershed level. Watersheds are gaining increasing acceptance as the most appropriate geographic unit for managing water resources (Schueler 1995). The condition of a watershed greatly influences the functions and integrity of its streams. Land use disturbances in watersheds can have a significant negative impact on stream water chemistry and aquatic biota (Tiner 2004). Watershed-based planning and zoning begins with the notion that the level of impairment of a watershed (e.g., the percent developed lands versus undeveloped forested lands) largely determines the quality of streams and therefore, the attainability of stream protection goals. This, in turn, strongly influences the nature of the stream protection strategy for a given watershed (e.g., the selection of land use standards, stream corridor management plans, implementation of best management practices, and instituting land acquisition or other protection strategies) (Schueler, 1995). Peer-reviewed scientific literature was reviewed to identify sound and defensible indicators of watershed condition (FitzHugh 2001; Tiner 2004; Snyder, et. al. 2005). Forest, in particular, is an important indicator of watershed condition due to its strong association with water quality and as an indicator of the extent of alteration of a watershed due to past human activity. The watershed indicators that were selected to evaluate each of the HUC14 subwatersheds of the Highlands Region are as follows:
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Watershed Values by HUC14

Legend

Watershed Values
- Low
- Moderate
- High

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Highlands Region

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Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
• **Percent Developed Lands** - the percentage of the subwatershed that is developed, with developed defined as lands that have been altered for residential, industrial or commercial uses;

• **Habitat Quality** – the percentage of the subwatershed that contains habitat for species of concern including rare, threatened, or endangered species;

• **Percent Total Forest** – the percentage of the subwatershed that is forested, with forested defined as all mature and successional upland and wetland forested communities (excluding old fields);

• **Percent Core Forest** – the percentage of the subwatershed that contains forest areas greater than 300 feet in distance from an altered edge (i.e., disturbed land); and

• **Proportion of Total Forest** – the percentage of the subwatershed that contains forest within a fixed search radius (3 kilometer).

The Highlands Council assigned a watershed value class to each HUC14 subwatershed in the Highlands Region based on a cumulative assessment of all the watershed indicators. The Council created the following watershed value classes for the Highlands subwatersheds:

• **High Resource Value Watershed** - A high resource value watershed contains predominantly forest lands and includes a significant portion of the watershed that is high quality habitat. A high value watershed typically consists of limited pre-existing developed land within the watershed;

• **Moderate Resource Value Watershed** - A moderate resource value watershed contains forest lands and some habitat suitable for rare, threatened, or endangered species, but typically also contains developed lands; and

• **Low Resource Value Watershed** - A low resource value watershed contains a low proportion of forest lands, a low proportion of habitat suitable for rare, threatened, or endangered species, and typically consists of higher levels of developed lands.

The Highlands Council analyzed the relative resource value for each of the 183 subwatersheds (see the figure **Watershed Values by HUC14**) and determined that the total acreage of High Resource Value Watersheds is nearly 70% of the Highlands Region. The total acreage of Moderate Resource Value Watersheds and Low Resource Value Watersheds are each roughly 15% of the Highlands Region.

2. **Evaluation of Riparian Area Integrity**

The integrity of riparian areas may be defined by that area’s ability to provide water protection and ecological function, including nutrient and sediment filtration, stream bank stabilization, wildlife migration corridors and habitat, storm water and flood water storage, and stream water quality protection (NJWSA 2000). Characterizing riparian area integrity entailed the examination of existing land use conditions within riparian areas, or those lands that are proximate to a surface water feature. The evaluation of riparian area integrity was expressed at the HUC14 subwatershed level.

The Highlands Council utilized peer-reviewed scientific literature to identify indicators of riparian area integrity (Castelle et.al., 1994; NRCS 2006; Phillips 1989; and Wegner 1999) and selected the following integrity indicators to evaluate each of the 183 subwatersheds:

• **Impervious Coverage** – the percentage of the riparian area that includes impervious surfaces;

• **Agriculture Land Use** - the percentage of the riparian area that is in agricultural use;

• **Number of Road Crossings per Linear Stream Mile** – the number of road crossings per linear stream mile;

• **Vegetation Condition** – the percentage of the riparian area that features urban and agricultural lands (as a means to determine the percent of natural vegetation); and

• **Water/Wetland Dependent Species Habitat** - the amount of habitat suitable for one or more water/wetland dependent wildlife species of concern including rare, threatened, or endangered species.

Thereafter, the Council assigned a riparian area integrity value class to each subwatershed (see the figure **Riparian Integrity by HUC14**) based on a cumulative assessment of all the indicators as follows:
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Legend

Riparian Area
Roadway Network
Interstate Highways
Administrative Boundaries
County Boundaries
Municipal Boundaries
Highlands Boundaries
Preservation Area Boundary
Highlands Region

Sources:
New Jersey Highlands Council, 2006
Natural Resources Conservation Service, 2006
New Jersey Department of Environmental Protection, 2006

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• **High Integrity Riparian Area** - These areas include subwatersheds with riparian areas that exhibit predominantly natural vegetation, including high quality habitat for water/wetland dependent species, and a generally low incidence of impervious area, agricultural uses, and/or road crossings;

• **Moderate Integrity Riparian Area** - These areas include subwatersheds with riparian areas that contain a higher incidence of impervious area, agricultural uses, and road crossings, and a reduced proportion of natural vegetation, including high quality habitat for water/wetland dependent species; and

• **Low Integrity Riparian Area** - These areas include subwatersheds with riparian areas that contain a high proportion of impervious area, agricultural uses, and road crossings, and minimal natural vegetation, including high quality habitat for water/wetland dependent species.

The Highlands Council determined that the total acreage of subwatersheds in High Resource Value Riparian Areas includes half of the Highlands Region. The total acreage of subwatersheds in Moderate Resource Value Riparian Areas includes nearly two-fifths of the Region and in Low Resource Value Riparian Areas include slightly more than 10% of the Highlands Region.

The classification of subwatersheds with respect to riparian integrity has been utilized by the Highlands Council to determine the zones of the Land Use Capability Zone Map and will also be used to evaluate site specific project review at the site plan level. A detailed description of the Highlands riparian area integrity and analysis is included in the Highlands Council’s *Ecosystem Management Technical Report*.

Subpart c. Steep Slopes

Slope is a measurement of the steepness of terrain and is defined as the vertical change in elevation over a given horizontal distance. Disturbance of areas containing steep slopes can trigger erosion and sedimentation, resulting in the loss of topsoil. It can also result in the disturbance of habitats, degradation of surface water quality, silting of wetlands, and alteration of drainage patterns. These processes, when severe, can also result in land slumping and landslides that can damage both developed property and ecosystems. The identification and classification of steep slopes is important in order to effectively manage critical natural resources in the Highlands Region.

In order to address the requirements and goals of the Highlands Act, the Highlands Council conducted an analysis by classifying and mapping steep slopes within the Highlands Region to identify areas that are significantly constrained by steep slopes and to ensure that the level of protection for these areas is appropriate. The establishment of steep slope protection requirements is intended not to simply protect steep slopes for their own sake, but to ensure the protection of the natural, scenic, and other resources of the Highlands Region.

The Highlands Council spatially examined slopes in the Highlands Region using the 10-meter Digital Elevation Grids generated from the United States Geological Survey’s (USGS) Digital Elevation Model. The Digital Elevation Model includes digital records of terrain elevations for ground positions at regularly spaced horizontal intervals, which are derived from USGS quadrangle maps. The Council examined areas of slope in the Highlands Region that encompassed a minimum of 5,000 square feet and that exhibited one of the following grade classifications and these grades were established as steep slope protection areas:

• grades of slopes of 20% or greater;
• grades of slope between 15% and 20%; and
• grades of slope between 10% and 15% that occur within the Riparian Area.

For slopes that exhibited grades between 10% and 15%, the Highlands Council differentiated between those within and outside Riparian Areas. Alteration of slopes of 10% or greater within a Riparian Area have a greater potential of impacting adjacent water bodies through soil erosion (thereby causing degradation of surface water quality, silting of wetlands, and alteration of drainage patterns). Thus, in order to meet the protection needs of Highlands Open Waters, slopes with a grade of 10% or greater in the Riparian Area were identified and mapped as steep slope protection areas. Each of the steep slope protection classifications are shown on the figure *Steep Slope Protection Area*. 
Legend

Riparian Integrity
- Low
- Moderate
- High

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Highlands Region

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Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
The Highlands Council recognized the need for more refined information on steep slopes in the Highlands Region and is in the process of developing accurate slope data using laser technology. Aerial flyovers of the entire Highlands Region, using Light Detection and Ranging (LiDAR) technology, occurred in late 2006 to prepare an updated and accurate digital model of the Region. The result will be a highly accurate Digital Elevation Model that will provide 2-foot contour interval mapping of the entire Highlands Region. This model will be a valuable tool to assist municipalities and counties during site plan review and will provide important information for the further development of this Plan.

The technical basis and additional background information on steep slope protection can be found in the Highlands Council’s *Ecosystem Management Technical Report*.

**Subpart d. Critical Habitat**

Biodiversity is the variety of plant species, animal species, and all other organisms found in a particular environment serves as a critical indicator of ecological viability. The protection of habitats that are critical to maintaining biodiversity contributes to the protection of rare, threatened, or endangered plant and animal species of the Highlands Region. There are three categories of critical habitat in the Highlands Region: 1) Critical Wildlife Habitat (habitat for rare, threatened or endangered species); 2) Significant Natural Areas (regionally significant ecological communities); and 3) Vernal Pools (confined, ephemeral wet depressions that support distinctive, and often endangered, species that are specially adapted to periodic extremes in water pool levels).

In furtherance of the requirements and goals of the Highlands Act, the Plan seeks to protect the natural resources of the Highlands Region, including the protection needs of the Region’s critical habitat. The Highlands Regional Master Plan focuses on three areas of action to address the need to protect critical habitat areas:

- Identify critical habitat areas;
- Develop resource protection measures; and
- Establish guidance for municipal officials and landowners pertaining to critical habitat conservation and management.

Critical habitat was utilized to determine the zones of the Land Use Capability Map and will also be used to evaluate site specific project review at the site plan level. The technical basis and additional background information on critical habitat protection requirements can be found in the Highlands Council’s *Ecosystem Management Technical Report*.

1. **Critical Wildlife Habitat**

The Highlands Council utilized NJDEP’s Endangered and Nongame Species Program Landscape Project data to identify potential rare, threatened, and endangered species habitats within the Highlands Region. An updated Landscape Project (Version 2) was developed for the Highlands Region to identify areas of habitat that are ranked by documented occurrences of rare, threatened, or endangered species as follows:

- **Landscape Rank 5** - habitat supporting a federally listed threatened or endangered species;
- **Landscape Rank 4** – habitat supporting a species designated as State Endangered;
- **Landscape Rank 3** – habitat supporting a species designated as State Threatened;
- **Landscape Rank 2** – habitat supporting a species designated as Special Concern; and
- **Landscape Rank 1** – habitat that meets minimum species habitat suitability needs but does not support a documented occurrence of a special concern, threatened, or endangered species.

A Highlands Conservation Rank index was also assigned to each species occurrence based upon how critical the Highlands Region is to the continued existence of the species within the state. Following are the Highlands Conservation Ranks that were used:
Steep Slope Protection Area

Legend

Steep Slopes
- Slope Greater Than 20%
- Slope Greater Than 15%
- Slope Greater Than 10%

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
- New Jersey Highlands Council, 2006
- United States Geologic Survey, 1999

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• **Critically Significant (Rank 3)** – if habitats in the Highlands Region were lost, that species would not exist in the State;
• **Significant** (Rank 2) – Highlands Region habitats play a significant role for that species’ existence in the State; and
• **Low Significance** (Rank 1) – Highland Region habitats do not play an important role for that species’ existence in the State.

Of the Highlands Region’s approximately 860,000 acres, the Council identified over three-fifths of the Region as habitat for rare, threatened, or endangered species. Of these, well over half are in the Preservation Area. The habitat for rare, threatened, or endangered species in the Highlands Region are shown in the figure *Critical Wildlife Habitat*.

### 2. **Significant Natural Areas**

Significant Natural Areas represent the presence of rare or endangered plant species or exemplary ecological communities. These sites include some of the best remaining habitat for rare plant species and regionally-significant ecological communities within the Highlands Region. The destruction or degradation of these sites could result in the loss of unique components of our natural heritage. The Highlands Council worked in cooperation with the NJDEP Natural Heritage Program to identify Natural Heritage Priority sites that are appropriate for inclusion as Significant Natural Areas within the Highlands Region.

The Natural Heritage Program’s Natural Heritage Priority Sites identify critically important areas for conservation of New Jersey’s biological diversity, with particular emphasis on rare plant species and ecological communities. The Highlands Council used 95 Natural Heritage Priority Sites to serve as the basis for the Region’s Significant Natural Areas. Significant Natural Areas will also include unique or regionally significant ecological communities and other significant natural sites or features. The locations of Significant Natural Areas in the Highlands Region are shown in the figure *Significant Natural Areas*.

### 3. **Vernal Pools**

Vernal pools are unique ecosystems that 1) provide critical breeding habitat for a variety of amphibian and invertebrate species; 2) contribute significantly to local biodiversity by supporting plants, animals and invertebrates that would otherwise not occur in the landscape; and 3) contribute significant amounts of food to adjacent habitats. Vernal pools periodically either dry out completely or draw down to very shallow levels unsuitable for sustaining fish. Fish are highly predatory on amphibian and invertebrate eggs and larvae, and several species of salamanders and frogs depend upon fish-free vernal habitats for their survival. The protection of vernal pools and adjacent habitat is important for maintaining ecological integrity and providing amphibian and invertebrate breeding habitat. Because of their ephemeral nature and small size, vernal pools are not comprehensively mapped and as a result, are often overlooked from a planning and protection standpoint. The Highlands Council mapped the list of those vernal pools that have been certified by NJDEP and their locations are shown in the figure *Certified Vernal Pools*.

#### Subpart e. **Open Space: Land Preservation and Stewardship**

The history of public and private investment in land preservation has secured nearly a third of the Highlands Region, 282,203 acres, as open space. Maintaining the land in a natural state is necessary where those lands provide important public benefits, most notably the protection of drinking water supplies. (see *Highlands Open Space* figure).

In recent years, the Garden State Preservation Trust Fund (Trust Fund) has served as the main source of funding for land preservation in New Jersey. The Trust Fund is funded from a quarter of a cent of the New Jersey sales tax, providing historic funding levels of approximately $150 million per year. The longevity of the Trust Fund is in jeopardy since the majority of dollars have been drawn down and the Trust Fund is projected to be depleted in the near future. This would significantly halt open space and farmland preservation activity in the State, unless the State reauthorizes the Trust Fund. In November of 2007, New
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Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
Legend

Natural Areas
- Significant Natural Areas

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
Legend

Certified Vernal Pools
- Green: Vernal Pools With 1,000 Foot Buffer

Roadway Network
- Yellow: Interstate Highways

Administrative Boundaries
- Gray: County Boundaries
- Red: Municipal Boundaries

Highlands Boundaries
- White: Preservation Area Boundary
- Purple: Highlands Region

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Sources:
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New Jersey Department of Environmental Protection, 2006

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New Jersey residents voted to approve Public Question # 3, approving the Green Acres, Farmland, Blue Acres, Historic Preservation Bond Act of 2007, which provides a one-year $200 million measure to fund statewide preservation efforts. As originally signed into law, the Garden State Preservation Trust Act included partnering agencies with specific targets for preservation stipulated in the Trust Act - the Green Acres Program secures lands for recreation and conservation purposes, the State Agriculture Development Committee’s (SADC) Farmland Preservation Program acquires the development rights on privately owned farmland, and the New Jersey Historic Preservation Trust provides matching grants for historic preservation projects.

The Highlands Act’s mandate for a “strong and significant commitment by the State” must be a central issue in the recapitalization of the Trust Fund. As a source of drinking water for over half of the State of New Jersey, securing funds for the protection and conservation of the Highlands Region must be a priority for future preservation efforts. Additionally, the existing programs funded under the Garden State Preservation Trust do not fully capture all of the important resources in the Highlands Region. In order to fill the gaps, the Highlands Council needs to be an active partnering agency and assist in the development of specific programs and funding targets.

Additionally, other stable sources of funding must be explored such as the imposition of a water consumption fee. The relationship between preserved land in the Highlands Region and clean drinking water has been well documented. Source water protection should be an overarching goal of water purveyors in the Highlands Region and water rate schedules should be modified to foster a purveyor’s ability to acquire critical watershed properties. This has been done previously in the Highlands Region by the New Jersey Water Supply Authority and by the North Jersey District Water Supply Commission.

The Federal government has historically funded open space acquisition in the Highlands Region. Most notably is the Forest Legacy Program, administered through the USDA Forest Service, that has invested $21,624,000 for lands totaling over 18,000 acres in the Highlands Region since 1995. The National Park Service Land, Water & Conservation Fund (LWCF) program also provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities. The Highlands Conservation Act (HCA), enacted in 2004, envisioned $100,000,000 for land preservation in the four state Mid-Atlantic Highlands region of which only $1,000,000 has been authorized to date.

Two-thirds of the municipalities, 60 out of 88, and all seven counties in the Highlands Region have created dedicated sources of funds or trusts to purchase open space for natural and cultural protection, agricultural easements to preserve farmland, and to develop recreation facilities. Total funds collected by Highlands Region municipalities in 2005 were $19,611,000. The total funds collected by the Highlands Region county open space programs in 2006 are $92,023,000, up from $80,215,000 the year before. These monies are all based on dedicated trust funds from property taxes.

The Highlands Act establishes an equity standard to be applied when the State is purchasing a property in fee or acquiring a property’s development potential, where those lands will be preserved for recreation or conservation purposes and either constitutionally dedicated monies or Green Acres bond act funds will be used. (Sections 53 and 54). In such situations, the State is to appraise the land based upon the land use regulations and any State environmental laws or regulations in place as of January 1, 2004, and then to appraise the property based upon the land use regulations and any State environmental laws or regulations in effect at the time of the proposed acquisition. The higher of these two property values is to be used as the basis for negotiation with the landowner with respect to the acquisition price of the property.

Subpart f. Carbonate Rock (Karst) Topography

Karst is a type of land surface, or topography, that is formed at the surface of carbonate rock formations when water dissolves the rock over time. This process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams and sinkholes direct surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. Stormwater basins, septic system leaching fields and sewers may also contribute contaminants directly to ground water through karst features. In addition to ground water concerns, communities in karst areas must
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Legend
Open Space
- Federal Open Space
- State Open Space
- State Conservation Easements
- County Open Space
- Municipal Open Space
- Non-Profit/Private Open Space
- Water Supply Watershed Lands
- Preserved Farmland
- Military Lands

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
- New Jersey Highlands Council, 2007
- Hunterdon County Division of GIS, 2005
- Green Acres Program, NJ DEP, 2007
- Morris County Planning, Development & Technology, 2005
- National Park Service, 2001
- New Jersey Conservation Foundation, 2005
- New Jersey Department of Agriculture SADC, 2007
- Somerset County GIS, 2005
- Sussex County Office of GIS Management, 2005
- The Nature Conservancy, 2004
- County of Warren Department of Planning, 2005
- NJDEP, 2007
content with safety concerns as sinkholes can have damaging effects to large manmade objects. The Highlands Region has several large areas with carbonate rock formations, usually river valleys such as the Musconetcong, South Branch of the Raritan and Lamington, and karst features exist in some — but not all — of these areas.

The Highlands Council relied upon existing New Jersey Geologic Survey and United States Geological Survey data to map areas of the Highlands Region that are underlain by carbonate rocks. These areas collectively are referred to as the Carbonate Rock Area (see Carbonate Rock Area figure). Since changes in the quantity, quality, and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area, lands that drain surface water into the Area will be delineated by the Council using LiDAR topographic analyses or other topographic data where LiDAR data are not available.

Management of development activities in carbonate rock areas is necessary to address the potential problems that are common to karst areas. The site assessment and design process can be modified for karst areas to allow applicants, municipalities and the Council to identify any karst concerns at a site and to incorporate appropriate design features in order to minimize future sinkhole (or other karst feature) formation, damage to development, and the potential for ground water contamination.

Subpart g. Lakes, Ponds and Reservoirs

Highlands Lakes and their environs, including Highlands lake communities, are an integral part of the characteristic Highlands landscape. Overbuilt, damaged and poorly managed shoreland areas can result in the degradation of water quality, harm to the lake ecosystem, the decrease of natural aesthetic values, and the overall loss of property values for lake communities. Lakes can be harmed by pollutant sources in the watershed area draining to them. Most existing lake communities were built out prior to modern environmental requirements. Some have sewer systems, but many rely on septic systems (or even cesspools) on inadequately sized lots. Studies indicate that nearly every public lake (privately-owned lakes were not evaluated) in the Highlands is experiencing contamination, often including excessive bacteria and nutrients. Many lake communities have been experiencing intensifying land uses as the original buildings are torn down and replaced by larger structures.

Efforts to protect, restore and enhance the water quality of Highlands lakes and to protect the unique character of Highlands lake communities require a mapping of lake resources to facilitate land use and water resource planning (see Lake Management Area figure). Lake management areas have been defined that include four tiers:

- **A Shoreline Protection Tier** comprised of all land within 300 feet of the shoreline of a Highlands Lake;
- **A Water Quality Management Tier** comprised of land within 1,000 feet of the shoreline of a Highlands Lake;
- **A Scenic Resources Tier** consisting of an area measured 300 to 1,000 feet from the shoreline, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances; and
- **A Lake Watershed Tier** consisting of the drainage area of a Highlands Lake as determined through the use of LiDAR topographic or other topographic data where LiDAR is not available, within which actions will be focused on the restoration of lake water quality, including activities under the Water Quality Restoration Program.

**Part 2. Water Resources**

**Subpart a. Water Quantity, Availability and Use**

In order to address the requirements and goals of the Highlands Act, the Highlands Council analyzed the natural water sustainability of the Highlands Region to determine the amount of water required to protect aquatic ecological integrity and the amount “available” for water supply, and commercial, industrial, or agricultural uses.
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Sources:
New Jersey Highlands Council, 2007
The analysis entailed using stream base flows as a surrogate for water sustainability because the protection of base flow is critical to maintaining healthy aquatic ecosystems and protecting potable surface water supplies, particularly during periods of drought. Base flow is the amount of ground water seepage into a stream, providing most of the natural stream flow during dry periods. Overuse of ground water and surface water can reduce base flows, impair the ecological function and integrity of Highlands waters, and reduce the reliability of potable water supplies.

For the surface waters supplying reservoirs that serve areas outside the Highlands Region, the Plan focuses on protecting existing safe yields through maintenance of base flows, the protection of water quality and agency coordination with NJDEP’s water allocation permit process. Many Highlands subwatersheds are source waters for these reservoirs, which underscores the importance of the Highlands Region as a water supply resource for areas of the State both within and outside the Region. (See figure Source Water Protection Areas and Reservoirs).

For ground water withdrawals and surface water uses other than protection of reservoir safe yields, methods that provide a direct relationship between aquatic ecosystem integrity and stream flows are not currently available. Therefore, the Highlands Council focused on the severity and duration of low flows as a reasonable surrogate for ecosystem and water supply impacts. The Highlands Council selected the Low Flow Margin method to estimate water capacity. This method is also being used by NJDEP in its recent Statewide Water Supply Plan update. This method is an important tool to provide estimates of water availability that can be used to determine sustainable land use capacity thresholds protective of water and ecological resources and water supplies. This approach is intended to meet the dual goals of protecting the ecological integrity of Highlands waters and assessing the sustainability of water supplies.

The Low Flow Margin analysis determines Ground Water Capacity for each HUC14 subwatershed, expressed as million gallons per day. However, only a portion of this volume is actually available for human use, with the majority being reserved for ecosystem health and maintenance of safe yields of potable water systems. To account for this, the Net Water Availability for a subwatershed is determined by deducting consumptive and depletive water uses from Ground Water Availability. The Plan incorporates Net Water Availability as a capacity threshold on water uses resulting from future development. Where Net Water Availability is positive, the subwatershed is deemed a Current Deficit Area, meaning existing uses are exceeding sustainable supplies. In addition, maintenance of stream flows within any HUC14 subwatersheds upstream of a Current Deficit Area is necessary without further impairing the ecological health of the stream or reducing the safe yields of water supplies. These areas are classified as Existing Constrained Areas and will be managed to ensure that the downstream deficit is not exacerbated. The figure Net Water Availability by HUC14 shows a summary of these calculations for each of the 183 subwatersheds in the Highlands Region.

The figure Land Use Capability Water Availability Map displays net water available for each subwatershed if conditional availability was granted in deficit areas. The figure represents an upper capacity thresholds based on current demands of water resources of the Highlands Region. The Highlands Council will refine municipal water availability estimates, and ensure that no subwatershed is used for water supply purposes beyond its capacity. Where deficits currently exist, restoration of water resources will occur through mitigation and management opportunities identified during the conformance process and local planning initiatives. The Plan emphasizes the critical role of conservation, recycling and reuse to minimize the impacts of existing or future uses. Finally, the Plan recommends the development of continuing improvements in calculating water availability, including methods of addressing all hydrologic flow regimes needed to support aquatic ecosystems.

The technical basis and additional background information on water use and availability requirements can be found in the Highlands Council’s Water Resource Assessment Technical Report.

**Subpart b. Ground Water Recharge Areas**

Ground water recharge does not occur uniformly in all areas of the Highlands Region. Recharge varies by soil, precipitation, land cover, and other factors. Some land areas will provide more recharge than others, and the best of these have been mapped by the Highlands Council as Prime Ground Water Recharge Areas. Prime
Legend

Net Water Availability By HUC14
Million Gallons Per Day (MGD)
- 0.10 - 0.39
- 0.05 - 0.09
- 0.00 - 0.04
- -0.09 - 0.00
- -0.99 - -0.10
- -7.10 - -1.00

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Highlands Region

Sources:
New Jersey Highlands Council, 2007
New Jersey Department of Environmental Protection, 2006

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Ground Water Recharge Areas are the areas in each subwatershed that have the highest recharge rates and, in total, provide 40 percent of total recharge for that subwatershed (see figure Prime Ground Water Recharge Areas). Protection of these lands and the quality and quantity of recharge from them has a high priority in the Regional Master Plan. The technical basis and additional background information on Prime Ground Water Recharge Areas can be found in the Highlands Council’s Water Resource Assessment Technical Report.

Subpart c. Water Quality

The Highlands Act emphasizes the protection, enhancement, and restoration of water resources throughout the Highlands Region, including the ground and surface waters that support aquatic ecosystem sustainability and provide necessary water supplies for the State.

1. Surface Water Quality

NJDEP’s Surface Water Quality Standards (SWQSs) establish the designated uses and specify the water quality criteria necessary to achieve these uses and protect the State’s waters. The two common designated uses for impaired surface waters in the Highlands Region are primary contact recreation due to unacceptable sanitary quality (91% of assessed water body units do not support primary contact use), and aquatic life support (65% of assessed water bodies do not support the use). The most common water quality parameters in violation of the State’s SWQSs are bacteria, temperature, and phosphorus, in descending order.

From 1984 through 2004, NJDEP conducted water quality sampling in waterbodies throughout the Highlands Region. Assessed parameters included dissolved oxygen (DO), DO saturation, nitrate (NO₃), total dissolved solids (TDS), ammonia (NH₃), total phosphorous (TP), and specific conductivity (a measure of salt content). In general, the results showed stable or slightly improving trends in water quality with the exception of TDS and specific conductivity which increased, indicating decreasing water quality.

However, as a result of the water quality assessment, many streams and lakes within the Highlands Region are designated as being impaired for water quality, with most impairment related to fecal coliform bacteria, phosphorus, and temperature. Some stream segments were designated as impaired due to arsenic concentrations. NJDEP, as required by the Federal Clean Water Act, has adopted regulatory, enforceable plans, known as total maximum daily loads (TMDLs), for many of these water bodies to reduce pollutant levels and restore water quality that meets the Surface Water Quality Standards.

NJDEP’s 2006 Integrated Water Quality Monitoring and Assessment Methods report utilizes five categories of use attainment, referred to as sublists. NJDEP used these sublist categories to characterize waterbodies in the Highlands Region. Sublist 1 indicates attainment of designated uses with no use threatened. Sublist 2 indicates that some uses are attained and no use is threatened. Sublist 3 indicates there is not enough or no data available to determine attainment status. Sublist 4 indicates impairments or threats, but no TMDL is required. There are subcategories within Sublist 4 as follows: 1) a TMDL has been developed; 2) other pollution control measures are expected to result in attainment in the near future; or 3) the impairment is caused by pollution (e.g., resulting from habitat degradation) but not by a pollutant. Sublist 5 indicates that the waterbody is impaired or threatened for one or more designated uses by a pollutant and requires a TMDL. The figure Impaired Waters Overall Assessment by HUC14 displays the status of designated uses for waterbodies by the subwatersheds (HUC14) within the Highlands Region. The Highlands Council, working with NJDEP, has determined that waterbodies in 119 of the 183 subwatersheds are impaired or threatened.

2. Ground Water Quality

There are five major aquifer types within the Highlands region, and their geochemical composition, hydraulic properties, proximity to land surface conditions, and exposure to pollution sources influence their water quality conditions. The five aquifer types are classified based upon their geologic nature, and are generally divided into crystalline, carbonate, and elastic aquifers typical of Highlands geologic formations, Newark Basin aquifers consisting of sedimentary and igneous rocks, and glacial aquifers that exist in both the Highlands and Newark Basin areas.
Prime Ground Water Recharge Areas

Legend

Recharge Area
- Prime Ground Water Recharge Area

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
New Jersey Highlands Council, 2006
New Jersey Water Supply Authority, 2006

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2006
New Jersey Water Supply Authority, 2006
Impaired Waters Overall Assessment by HUC14

Legend
Impaired Waters
- Non Impacted
- Minor
- Insufficient Data Available
- Moderate
- Water Quality Impaired

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Highlands Region

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
Unconfined aquifers are located closest to the surface, with their upper boundary defined by the water table. Because unconfined aquifers are “open” to the atmosphere, they are recharged directly by precipitation, and are often in direct hydraulic connection with surface water bodies. Semi-confined or “leaky” aquifers are located beneath a lower permeability semi-confining unit, which is discontinuous in places and/or sufficiently “leaky” to permit water to move across it.

A thorough and complete assessment of ground water quality in all the Highlands Region bedrock aquifers is not possible at this time due to a lack of available data. While ample data exists from wells in the crystalline bedrock aquifers that comprise the upland areas, fewer sources of data are available from wells in the dolomites, slates, and other geologic units making up valley floors in the Region. Given those limitations, and based on the available data, ground water quality in the deeper portion of the bedrock aquifers is suitable for most purposes, however, the ground water may require treatment for pollutants or undesirable characteristics (such as low or high pH) and contaminants (such as manganese or radionuclides). Relatively low pH, alkalinity, and total dissolved solids (TDS) concentrations in water from the Precambrian metamorphic crystalline rock aquifers indicate that mineral water reactivity is minimal compared to the sedimentary rock aquifers in the valleys. Resistance to weathering results in those metamorphic rock types being predominant in upland areas, yielding a low buffering capacity. Water in and associated with these rock types is therefore particularly vulnerable to acid rain and other forms of contamination. This is particularly true of karstic aquifer regions, where dissolution of limestone or dolomite often produces large cavities or solution channels that can facilitate surface to subsurface contaminant migration.

Glacial aquifer water quality varies throughout the Highlands Region. Because the depth to these aquifers tends to be shallow, they are more vulnerable to pollution from intentional, incidental, and accidental pollutant discharges from past and existing land uses. These pollutants include nutrients from fertilizer and septic system use; oil, gasoline, and deicing salts from roadways; and volatile solvents, and other industrial chemical releases. In addition, these aquifers interchange water with adjacent streams more frequently than bedrock aquifers, which can also affect ground water quality.

There is no equivalent to the TMDL process for ground water quality, but several programs exist to regulate ongoing discharges, reduce the potential for accidental discharges, and restore ground water quality from past pollution events. NJDEP has identified several categories of groundwater contamination areas, including Classification Exception Areas and related Well Restriction Areas, Currently Known Extent Areas, and Deed Notice Exhibits that provide information on ground water quality impacts related to natural ground water quality, permitted discharges or contaminated site remediation. Engineering or institutional controls may exist and must be maintained to prevent exposure to contaminants in these designated areas.

Classification Exception Areas and Well Restriction Areas are areas where the ground water quality standards are exceeded. Within a Classification Exception Area, where designated aquifer use includes potable supply and drinking water standards are exceeded, the area will be designated as a Well Restriction Area. Currently Known Extent areas are those areas known to be compromised because the water quality fails to meet drinking water and/or ground water quality standards. Currently Known Extent areas designations can be used when considering the placement of potable wells. Deed Notice Exhibits document known soil contamination at levels that may restrict the use of, or access to, a property because soil contamination can lead to impacts on ground water quality.

3. Wellhead Protection

Residents of the Highlands Region rely on ground water supplies as a primary source of drinking water. A Wellhead Protection Area (WHPA) is a mapped area around a public water supply well that delineates the horizontal extent of ground water captured by a public water supply well pumping at a specific rate over a specific time. A WHPA has three tiers which serve to mark the boundaries for priority areas for the protection of ground water quality. Tier 1 is a two-year time of travel, (i.e. the ground water within this tier flows to the well within a two-year time period). Tier 2 is equivalent to a five-year time of travel, while Tier 3 is equivalent to a twelve-year time of travel. (Tier 3 also includes the land area within Tiers 2 and 1, and Tier 2 also includes the land area within Tier 1.)
Legend

Highland Wells
- Public Community Wells

Well Head Protection Areas
- 2-Year Tier
- 5-Year Tier
- 12-Year Tier

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006

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The public water supply wells are grouped into two categories based on the type of water supply system they support. Public community water supply systems have at least 15 service connections used by year-round residents, or regularly serve at least 25 year-round residents. An example is a municipal system that services single-family residential homes. A non-community water system is a public water system used by individuals other than year-round residents, such as hospitals or restaurants, for at least sixty days of the year.

The WHPAs for public community water supply systems in the Highlands Region are depicted in the figure Wellhead Protection Areas. A total of 580 public community water supply WHPAs have been mapped in the Highlands. Many wells are located in close proximity to the development they serve which poses a risk of contamination from existing and past development patterns. Public community water supply wells that have been polluted result in either their loss as a potable water supply source or require sophisticated treatment prior to continued public use.

The New Jersey Source Water Assessment Program Plan prepared by NJDEP describes the various sensitivity and intensity factors of concern used to develop the susceptibility ratings for ground water and surface water drinking water sources for the following categories of contaminants: pathogens, nutrients, pesticides, volatile organic compounds, synthetic organic compounds, inorganics, radionuclides, and disinfection byproduct precursors. Numerous sites and activities were included in the Potential Contamination Source Inventories, including agricultural land use, bulk chemicals, contaminated soils, discharges to surface and ground water, highway runoff, industrial and commercial point sources, known contaminated sites, leaking sewer lines, mining operations, naturally occurring contaminants (e.g., arsenic, asbestos, radon), recreational activities (e.g., golf courses), septic systems, leaking underground storage tanks, and wastewater treatment plants, among others.

Individual reports have been created for each of the community water systems and the non-community water systems relying on surface water. These reports provide the susceptibility ratings for each water system source per contaminant category. In order to gain an understanding of the relative susceptibility of each supply source to specific types of contamination, each well or intake was assigned a rating of low, medium, or high susceptibility for each of the eight categories of contaminants. The ratings are based on a comparison to drinking water standards, or maximum contaminant levels for the contaminants of concern. In general, the low susceptibility category includes wells for which a particular contaminant is not likely to be detected, and the medium and high susceptibility categories include wells for which a particular contaminant is more likely to be detected.

For wells in unconfined aquifers receiving a high susceptibility rating, the three contaminant categories with the highest percentage of pollutant sources are nutrients (67%), volatile organic compounds (61%), and radon and radionuclides (50% and 49%, respectively). Within confined aquifers, only the disinfection byproduct precursors contaminant category contains wells that received a high susceptibility rating (27%). A number of wells within confined aquifers receive a medium susceptibility rating primarily attributed to disinfection byproduct precursors (70%), inorganic chemicals (47%), and radionuclides (39%).

The technical basis and additional background information on Water Quality can be found in the Highlands Council’s Water Resource Assessment Technical Report.

Subpart d. Water Supply Utility

Future development within the Highlands Region at densities consistent with smart growth principles is generally reliant on access to public community water supply systems, which may be owned and operated by governmental entities (either as municipal operations or utility authorities) or investor-owned utilities. Public community systems, whether their source consists of ground water or surface water withdrawals, have the potential to induce or support growth. On-site supply systems for industry, commercial buildings, schools and other facilities are common in the Highlands Region; however, these systems have little if any capacity for serving other utility needs.

Public community water supply systems are defined as those with at least either 15 service connections or 25 customers who are year-round users of the water supply. There are many such systems in the Highlands, with service areas ranging in size from mobile home parks to multiple municipalities. They are all regulated by
NJDEP under the Safe Drinking Water Act. Through this program, NJDEP collects information on the treatment, storage and distribution capacity of the water system. Some of these water systems acquire their water supply through withdrawals that are permitted through the NJDEP water allocation program. Ground or surface water withdrawals of 100,000 gallons per day ("gpd") in the Planning Area or 50,000 gpd in the Preservation Area require water allocation permits. Some water systems are supplied by water purchased from bulk water purveyors or other water utilities. Others may depend upon a combination of their own source water and purchased water.

In furtherance of the requirements and goals of the Highlands Act, the Highlands Council collected the following information on potable water utilities:

- Areas currently served by public community water systems;
- Total system capacity and current water demand;
- Net utility capacity to support development.

Planning for future water supply service areas requires knowing the existing area served, which in this case means those areas currently served by “in the ground” infrastructure, rather than planned facilities. Unlike wastewater systems and other utilities, there are few existing mandates requiring the mapping of water supply service areas. Information on existing water supply service areas is often not readily available and while franchise areas are commonly mapped, they often do not reflect the actual area served.

The Highlands Council set out to compile an updated inventory of the existing service areas through the collection of available computer-based mapping, billing records, hydrant locations, and water line data. The inventory of existing areas served by water supply systems, cover a total of 20 percent of the Highlands Region, with 6 percent of the Preservation Area and 32 percent of the Planning Area. Highlands water supply systems extend beyond the boundaries of the Highlands Region (e.g., Southeast Morris Municipal Utility Authority), and non-Highlands water supply sources may have the capacity to provide water to municipalities in the Region (e.g., New Jersey American Water Company--Elizabethtown Division).

There are 163 major water systems in the Highlands Region. Of these facilities, 73 are small systems, such as those that serve a single apartment complex, that have no additional capacity to support growth. There are 90 distinct, larger systems in the Highlands Region generating the vast majority of total demand. Some of these systems are supplied by large purveyors whose water supply is withdrawn outside the Region and imported into the Highlands. The demand generated from uses primarily within the Region is estimated at 2,691 million gallons per month. The figure Land Use Capability Public Community Water Systems Map provides an overview of the areas of the Highlands Region that are currently served by the public community water systems and their estimated net capacity. Demands were not apportioned between Highlands and non-Highlands Region, because accurate service areas were not available for the non-Highlands portions.

Each public community water supply system has been constructed to provide drinking water to its existing and anticipated customers during both normal and peak flows. The Council examined two different types of limitations to system capacity: the physical infrastructure (e.g., pumps, treatment plants, storage) represented by firm capacity; and the available supply of water resources, represented by water allocation permits and bulk purchase contracts. The physical infrastructure defines the limits for water delivery that are inherent to the system, while the NJDEP water allocation permits and associated limitations in water availability define the limits for water supply that are inherent to the water resources (e.g., aquifer, reservoir system). Firm capacity can increase over time if the system upgrades are made but the source of the water to support that system may be limited. Therefore, the water supply allocation was utilized as a better estimate of ultimate utility capacity.

Available information on well and surface water withdrawal locations has been compiled in order to understand the impacts of water utilities on their respective sources. The Council compared the existing service areas with ground and surface water supply sources on maps of the 183 subwatersheds (HUC14) in the Highlands Region. The projected demand from water users was examined to understand the relationship of normal demands to peak demands in the summer and the resulting inventory compiled by the Council includes the peak monthly demands from the years 2000 - 2005. Monthly demands were used because daily demands, especially within
the summer, are so variable. The result of this analysis allows for a comparison of utility capacity (essentially, how much capacity the water utility has available for future development) to Net Water Availability within each subwatershed.

The Council identified the appropriate next steps for assessing utility capacity of public community water systems during the planning process: (1) identify those areas for which growth capacity would be useful, (2) determine whether there is net utility capacity available to support additional demand, and then (3) if net utility capacity exists, determine whether there are existing future commitments that correspond to the Existing Community Zones or conflict with them. If conflicts exist, then further analysis would be necessary regarding the potential for equitable methods of capacity reallocation. Additional information on water supply utilities can be found in the Highlands Council’s *Water Utility Technical Report*.

**Subpart e. Wastewater Utility**

The primary wastewater collection systems in the Highlands Region predominantly treat residential wastewater. A Highlands Domestic Sewerage Facility, which includes publicly-owned and investor-owned domestic wastewater treatment facilities, provides wastewater treatment to municipalities and has collection systems that can support redevelopment and regional growth opportunities. These facilities generally have NJDEP-permitted discharge capacity of more than either 0.150 million gallons per day (MGD) for discharge to surface water or 0.075 MGD for discharge to ground water.

Similar to the approach for potable water utilities, the Highlands Council assessed wastewater utilities by examining the existing areas served and the capacity of the wastewater infrastructure systems in the Highlands Region.

There are 42 Highlands Domestic Sewerage Facilities representing a total wastewater treatment capacity of approximately 121.61 MGD and a total discharge flow at the maximum three month rate of 99.98 MGD. Some of these facilities have service areas that extend beyond the Highlands Region so a pro rata allocation based on the relative portion of the service area in and outside of the Highlands Region was used to estimate a Highlands Region treatment capacity of approximately 78.41 MGD and a total discharge flow at the maximum three month rate of 63.11 MGD, or approximately 80% of the total treatment capacity. Individual facilities have discharge flow (at the maximum three month rate) ranging from 42% to 192% (indicating a deficit) of total treatment capacity, and from a deficit of 0.21 MGD to 2.52 MGD of current available capacity. The figure *Land Use Capability Domestic Sewerage Facilities Map* provides an overview of the areas of the Highlands Region that are currently served by the Highlands Domestic Sewerage Facilities and their estimated capacity.

In furtherance of the requirements and goals of the Highlands Act, the Plan focuses on the following areas of to address wastewater utilities:

- Identify areas currently served by existing wastewater facilities;
- Identify areas that are inappropriate for future expansion of infrastructure;
- Determine available wastewater system capacity and ability to support additional development.

Additional information on wastewater utilities can be found in the Highlands Council’s *Water Utility Technical Report*.

**Subpart f. Septic System Capacity**

There is a clear link between nitrate concentrations in ground water and land use. Land use activities, particularly agricultural practices, lawn care and septic system effluent disposal, contribute to elevated concentrations of nitrate in ground and surface water. Understanding and managing the impact of contributions of nitrate loadings from septic systems in the Highlands Region is an important aspect of maintaining the overall quality of water for both water supply and ecological values.

Nitrate is often used as an indicator of the risk of impairment to ground water quality related to land use. High levels of nitrate in ground water may result in serious health impacts and can have long lasting effects on the
geochemistry and ecological functioning of soils and water resources. Elevated concentrations of nitrate in surface water can cause a loss of biodiversity and lead to eutrophication, algal blooms, and oxygen depletion. Primary nonpoint sources for nitrate are agricultural runoff and soil contamination from the introduction of septic system effluent and other diffuse loading sources such as chemical lawn care application. Point source discharges, such as those from sewage treatment plants, also contribute to nitrate loadings.

The Highlands Council has established target nitrate concentrations for the Planning Area, necessary to ensure the protection, restoration and enhancement of the waters in the Highlands (the NJDEP rules implementing the Highlands Act address nitrate targets for the Preservation Area). The Council’s nitrate targets for the Planning Area were used to calculate the allowable septic system density and additional new septic systems by municipality. Allowable septic densities specific to each municipality and zone were computed using the Trella-Douglass nitrate dilution model, which requires as inputs the target nitrate concentration and HUC14-specific annual recharge. The target nitrate concentrations for the Protection and Conservation Zones within the Planning Area are 0.72 mg/L and 1.87 mg/L, respectively. These values represent the median nitrate concentrations for each zone. Annual recharge values were estimated using GSR-32 under assumed drought conditions, using the New Jersey Drought of Record spanning 1961-1965.

In order to establish the baseline conditions of nitrate concentrations in the Highlands Region, the Highlands Council analyzed nitrate concentrations measured in wells located throughout the Region in a variety of environmental and land use settings. The Highlands median of measured nitrate concentrations is 1.1 milligrams/liter (mg/L). However, the existing sampling data for nitrates are insufficient to establish the variability of background nitrate levels throughout the Highlands Region, particularly in areas that have limited development and as such limited ground water quality data. Models were developed for each of the 183 HUC14 subwatersheds to estimate the nitrate concentrations throughout the Highlands Region. These models utilized available water quality data, land use variables, and specific features that are predictive of median nitrate concentrations in ground water. The best combination of variables for predicting HUC14-specific median nitrate concentrations, as determined by modeling objectives and results, included the percentage of urban land use, the percentage of agricultural land use, the septic system density in the area, the length of streams, and the number of known contaminated sites within the area of analysis.

Median nitrate concentrations were estimated for each of the 183 HUC14 subwatersheds within the Highlands Region. These HUC14-specific median nitrate concentrations estimated with the logistic regression models range from 0.17 to 3.6 mg/L, with an overall median value for the Highlands of 0.83 mg/L, slightly lower than the 1.1 mg/L value calculated directly from well sampling analytical results. The model results are considered to be more accurate as they address limitations in the well monitoring network, related to the overall distribution of wells and the disproportionately small number of wells located in undeveloped areas. Based on the models natural levels in the Highlands Region are approximately 0.1 mg/L.

The results indicate that subwatersheds that are dominantly Conservation Zone generally have the highest median nitrate concentrations, followed by the Existing Community Zone, and lastly the Protection Zone. Within HUC14 subwatersheds that are located mostly in the Planning Area, the median nitrate concentrations for the HUC14’s that are predominantly Conservation, Existing Community and Protection Zone are 1.87, 1.17, and 0.72 mg/L, respectively. The results of the median nitrate concentration analysis, aggregated into representative values for the HUC14-specific results are illustrated in the figure Median Nitrate Concentration by HUC14s. The resulting septic system yields by HUC14 subwatershed are shown in the figure Land Use Capability Septic System Density Yield Map.

An important factor in the protection of ground water quality from degradation by nitrate and related pollutants (e.g., pathogens) is the proper location, design, construction, installation, repair, and operation of individual septic systems. These systems are subject to NJDEP’s Standards for Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A) and are generally regulated at the county and municipal level. An important consideration in the design of septic systems is the suitability of the soils, an important part of the treatment process, to handle septic effluent. Although the soil conditions and geological characteristics of the Highlands Region provide some areas where the soil characteristics are appropriate for the use of septic systems, most of the Region is considered unsuitable for the use of standard septic systems, based on soil property limitations.
Legend

Median Nitrate Concentration
Milligram per Liter
- 0.17 - 0.72
- 0.73 - 1.87
- 1.88 - 3.23

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Highlands Region

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
Of further concern is the layout of developments to ensure that the risk of well contamination from upgradient septic systems is minimized.

The technical basis and additional background information on nitrate management can be found in the Highlands Council’s Water Resource Assessment Technical Report.

**Part 3. Agricultural Resources**

Agriculture is a vital component of the culture and landscape of the Highlands Region. It provides economic benefits through both agricultural production and maintaining the rural character of Highlands communities. The loss of farmland over recent decades emphasizes the crucial need to promote and encourage a positive agricultural business climate.

The Highlands Region has experienced a steady loss of agricultural lands representing an average rate of loss of 1,700 acres per year, a 19% decline between 1986 and 2002, representing over 27,500 acres. According to the New Jersey Department of Agriculture, between 1998 and 2003 there was an 8% decrease in farmland.

In addition to the direct loss of agricultural lands, other measures of agricultural losses, such as the amount of farmland in field crop production, show a similar decrease. In 1998, the total acreage of field crops, which includes corn, wheat, soybeans, hay and other cover crops, was 81,313 acres. These crop lands decreased to 70,567 acres in 2003. The loss of over 10,000 acres of field crops during this five-year period represents a 13% loss for the Highlands Region.

A key program for the sustainability of agricultural activities is the State Agriculture Development Committee’s (SADC) Farmland Preservation Program. Since the program’s inception in 1983, a total of 33,651 acres have been preserved in the Highlands Region - 21,097 acres in the Planning Area and 12,554 acres in the Preservation Area. Together, these preserved farmlands represent approximately 21% of all farmland preserved statewide.

In furtherance of the goals and requirements of the Highlands Act, the Plan focuses on two areas of action to address the need to protect Highlands agriculture resources:

- Identify high quality agricultural lands in need of preservation; and
- Develop a process to ensure sufficient financial and institutional resources are available for agriculture protection and sustainability in the Highlands Region.

These two areas of focus will also determine the amount and type of human development and activity that the ecosystem of the Highlands Region can sustain while maintaining the overall character of the Region, with special reference to production and enhancement of agricultural or horticultural activities.

Many factors contribute to sustainable agricultural practices. These include, but are not limited to, soil quality and productivity; agricultural infrastructure; the changing and dynamic nature of the agricultural industry; farming methods, including conservation practices; size of a parcel and proximity to other agricultural lands; and local interest in maintaining agriculture in the community.

For purposes of identifying critical agricultural lands in the Highlands Region, the Highlands Council examined the distribution, size and quality of existing farms. The resources were evaluated to specifically consider the realities of farming in the Highlands Region. For example, the average size of a preserved farm in the Highlands Region is small, just over 55 acres. Consequently, in the Highlands Region, the importance of farm size is diminished as a critical factor. On the other hand, development pressure and the extent to which farming has been retained in a community becomes a more significant factor to consider.

The Highlands Council used the following factors to assess the Region’s farmland and to identify the most important agricultural resources: farming landscapes that account for 250 acres or more of contiguous farmland; farms that include important farmland soils; extent of the lands adjoining a farm that is in agricultural use; and concentrations of preserved farmland. Using these factors, the Highlands Council spatially delineated
an Agricultural Resource Area representing that portion of the Highlands Region that includes a prevalence of active farms (See figure Agricultural Resource Area).

The technical basis and additional background information on agriculture protection requirements can be found in the Highlands Council's Sustainable Agriculture Technical Report.

Part 4. Historic, Cultural, Archaeological and Scenic Resources

Historic, scenic and recreational resources play a critical role in defining the character of the Highlands. These resources will continue to attract people to the Region and must be managed to take advantage of their contribution to economic vitality and a high quality environment for the future.

The Highlands Region contains important historic, cultural, archaeological and scenic resources. Historic resources include buildings, structures, objects, districts, sites, or areas that are significant in the history, architecture, archaeology, engineering or culture of a place or time. Historic resources help connect people to the past, reminding them of a community’s origins.

Cultural resources include sites, artifacts, or materials that relate to the way people live or lived, including archaeological sites, rock carvings, and ruins. These resources are generally defined based on existing documentation or artifacts discovered that relate to activities of people who lived, worked, or recreated in the area during a period in history. The integrity of a cultural resource is defined by its ability to convey its significance through its physical characteristics.

Scenic resources include sites and landscapes that are distinctive and remarkable for their geology, topography, history, culture, and aesthetics or can be representative of the defining character of a community. They may include prominent ridgelines, mountainsides or hillsides, panoramic vistas, community gateways and landmarks, river valleys and agricultural landscapes.

The Highlands Region has presently identified 606 historic resources, of which 41% are currently listed on the New Jersey and National Registers of Historic Places. Of those listed, 59 are historic districts that contain collections of individual sites. The Highlands Region also has four National Historic Landmarks and 56 recorded archaeological sites. The actual number of archaeological sites in the Region is anticipated to be significantly larger than those currently recorded by the State Historic Preservation Office. The National Historic Landmarks are Craftsman Farms in Parsippany, Vail Factory/Speedwell Village and the Thomas Nast House in Morristown, and Ringwood Manor in Ringwood. Additionally, several sites have regional significance and traverse multiple counties and municipalities, such as the Morris Canal.

Largely by virtue of its industrial history, the Highlands are also home to many abandoned mines. Of the 544 identified abandoned mines in New Jersey, 95% are located in the Highlands Region. The Sterling Hill Mine in Ogdensburg, Sussex County is listed on both the State and National Register of Historic Places. Additionally, the Weldon Mine in Jefferson Township and the iron mines in Montville Township, both in Morris County, have received opinions of their eligibility for listing as a historic site from the State Historic Preservation Office.

Historic, archaeological, cultural, and scenic resources are part of the character of the Highlands Region and an important part of its cultural heritage. These resources provide the public with an understanding of how the land and people of the Highlands have changed over time. They also aid in fostering an appreciation for the events that contributed to the development of the towns, villages, and cities that exist in the Highlands today.

Subpart a. Historic, Cultural and Archaeological Resources

In collaboration with the State Historic Preservation Office (SHPO), the Highlands Council prepared a baseline inventory of the 606 historic and cultural resources within the Highlands Region. The Historic and Cultural Resource Inventory includes: 1) all properties listed on the State or the National Register of Historic Places; 2) all properties which have been deemed eligible for listing on the State or National Register; and 3) all properties for which a formal SHPO opinion has been issued. A SHPO opinion is an evaluation of eligibility
Agricultural Resource Area

Legend

Resource Area
- Agricultural Resource Area

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2006
prepared when a federally funded activity is expected to have an effect on historic properties not listed on the National Register.

The Highlands Historic, Cultural and Archaeological Resource Inventory includes buildings, structures, sites, landmarks, objects, and historic landmark districts identified and evaluated to date. A great deal of the information is obtained from the New Jersey and National Registers of Historic Places which list those special places that have been analyzed and recognized as important for their historic values. Historic, archaeological and cultural resources in the Highlands Region include, but are not limited to:

- Agricultural Historic Districts and Farmsteads, including farm buildings such as houses, barns, windmills, spring houses, corn cribs, fields, fence lines, etc.;
- Historic Landmark Districts and architecture that represent a significant period in American History such as Ringwood Manor, Skylands Manor, Craftsman Farms, early stone houses, log cabins, churches and schools;
- Archaeological sites, including early American settlements, such as the prehistoric Black Creek site in Sussex County, rock shelters, and historic mill and farm ruins;
- Designed landscapes attributed to a significant landscape architect or designer;
- Health and public welfare facilities, including Greystone Park Psychiatric Hospital and Morris County Alms House and Hospital;
- Industrial facilities or complexes, including Long Pond Ironworks, saw mills, grist mills, manufacturing sites, dams, quarries, mines, lime kilns, paper mills and forge sites;
- Military installations and places of significance such as Picatinny Arsenal and Revolutionary War Encampments, Battlefields and skirmish sites;
- Recreational landmarks such as the Appalachian Trail, the White Deer Plaza and Boardwalk in Sparta Township, or Civilian Conservation Corps facilities;
- Transportation facilities representing a significant period of time in history or unusual architectural style, such as the Morris Canal, and stone or steel-truss bridges; and
- Water supply facilities such as the Wanaque Reservoir dam.

Subpart b. Scenic Resources

The scenic resources of the Highlands preserve the look and character of the area and ensure that beauty will remain for future generations. For many, the picturesque ridges and valleys are the most unique Highlands land features. While scenic resources have not previously been cataloged to the same extent as historical, archaeological and cultural resources, the Highlands Council assembled a baseline Scenic Resource Inventory as a foundation.

The Highlands Council has initially identified a Scenic Resource Inventory of 131 scenic resource areas, including national historic landmarks, publicly-owned parks, forests, and recreation areas. This inventory will serve as a baseline from which to begin to refine a list of scenic resources.

The technical basis and additional background information on these historic, cultural, and scenic resource protection requirements can be found in the Highlands Council’s Historic, Cultural, Scenic, Recreation, and Tourism Technical Report.

Part 5. Transportation

The Highlands Council is committed to helping shape the Highlands Region’s transportation investments by working with State and local agencies and stakeholders. By promoting efficient land use, goods movement and increasing access to an inter-modal transportation system, the Highlands Council can better protect environmentally sensitive areas. By implementing smart growth principles and by looking at transportation and land use planning in a comprehensive manner, a long-term strategy can then be developed to better handle the Region’s many transportation related concerns.
Legend

Roadway Network
- Interstate Highways
- U.S. Routes
- State Routes
- County Routes
- Local Routes

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Highlands Preservation Area
- Highlands Planning Area
- Highlands Region

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Transportation, 2004
Following smart growth principles and efficient land use policy characterized by compact, mixed use development, higher densities and a more compact built environment, Highlands Region municipalities can begin to promote alternative modes of transportation to automobile travel. The Region can achieve the goals outlined in the Highlands Act by encouraging a more compact mixed-use pattern for new development and redevelopment, creating more transportation choices, including mass transportation, bicycle, and pedestrian travel.

The Highlands transportation system is a complex network of roads, railways, and bridges that supports various modes of travel including automobile, bus, rail, truck, bicycle, and pedestrian. The Highlands Region also includes three airport facilities. There are four limited-access highways in the Highlands Region, which include Interstate routes 78, 287, 80 and 280. There are also numerous US, State and County routes and local roads providing extensive roadway access in the Region (see figure Roadway Network). There are also four major commuter rail lines in the Highlands Region: the Boonton Line, Main Line & Bergen County Line, Morris and Essex Line, and Raritan Valley Line (see figure Transit Network).

In order to evaluate the Highlands roadway network performance, the Highlands Council worked with NJDOT to develop a Highlands Sub-Area model based on information developed from a larger model known as the North Jersey Regional Transportation Model (NJRTM). The Highlands Sub-Area model summarizes the existing vehicular travel patterns and traffic conditions within the Highlands Region for the base year 2002. The NJRTM focus model covers thirteen counties in Northern and Central New Jersey including the entire Highlands Region. It currently is the primary analysis tool for transportation planning in the Region. The model identifies major origin and destination trips generated in the Highlands Region, and reports on road capacity conditions during AM and PM peak periods.

The Plan supports Transit Oriented Development as one example of a method that integrates mixed uses and transportation planning, by promoting more compact development in and around existing transportation infrastructure as an alternative to sprawl. Transit Oriented Development focuses mixed-use development around transit stations, and is designed to create walkable communities with access to multiple modes of transportation. NJDOT, through its Transit Village Initiative working with NJTransit, has been instrumental to advance Transit Oriented Development. Currently there are two municipalities in the Highlands Region, Netcong and Morristown, that have been designated through the NJDOT’s Transit Village Initiative. Also supporting Transit Oriented Development in New Jersey is the Transit Friendly Planning Assistance program, which is run by NJTransit to support land use decisions around transportation hubs. Municipalities in the Highlands Region that have received funding from this program include Morristown, Netcong and Dover.

Recognizing that the agricultural industry is a vital component of the economy, welfare, and cultural landscape of New Jersey, the Plan also supports agricultural viability in the Highlands Region. One of the major problems facing farmers in New Jersey is the ability to move large pieces of farm equipment on public roadways in order to access different farms and markets safely and efficiently. In order to ensure the safety and viability of farming as an occupation in the Highlands Region, safe travel routes for farmers need to be coordinated with county and local governments and State agencies such as NJDOT and the New Jersey Department of Agriculture. New transportation improvements to roads and bridges need to be designed to accommodate farming equipment, especially in rural areas. Alternative routes should also be explored where feasible, whereby developing inter-parcel access roads for farmers to pass between cropped lands without increasing impervious surfaces or venturing onto well traveled roadways. In order to better serve farmers in the Highlands Region, “Farm-to-Market” routes should be established to improve upon the safe and efficient movement of goods from farms and areas of supply to areas where goods are demanded such as downtowns or urban markets.

The Highlands Act establishes the protection and restoration of natural resources as priority goals. One of the critical challenges of the transportation system is one of balancing regional transportation needs and environmental integrity. Innovative approaches to roadway design put greater emphasis on ecological systems. The term “Green Street” describes a series of low impact development approaches that seek to design a street system that protects water resources and minimizes the adverse affects of surface water runoff. The Plan promotes site design measures which utilize low impact development practices as a key to reducing surface
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LAND USE CAPABILITY
Water Availability Map
(Map 2 of 5)

Source:
New Jersey Highlands Council, 2007

Legend
Preservation Area Boundary
Highlands Boundary
Roadway Network
Interstate Highways
U.S. Routes
State Routes
Administrative Boundaries
County Boundaries
Municipal Boundaries
Hydrologic Unit Code (HUC14)

Net Water Availability (Conditional) By HUC14
Million Gallons Per Day (MGD)

- 0.00 - 0.01
- 0.01 - 0.05

Net Water Availability (Unconditional) By HUC14
Million Gallons Per Day (MGD)

- 0.00 - 0.05
- 0.05 - 0.10
- 0.10 - 0.39

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Prepared By:
New Jersey Highlands Council
November 2007
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Legend
- Preservation Area Boundary
- Highlands Boundary
- Administrative Boundaries
- County Boundaries
- Municipal Boundaries
- Roadway Network
  - Interstate Highways
  - U.S. Routes
  - State Routes
- Highlands Public Community Water Systems
  - Available Capacity in Million Gallons Per Month (MGM)
    - > 25 MGM
    - 5 - 25 MGM
    - 0.01 - 5 MGM
    - No Capacity

Source:
New Jersey Highlands Council, 2007

Prepared By:
New Jersey Highlands Council
November 2007
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Prepared By:
New Jersey Highlands Council
November 2007
LAND USE CAPABILITY

Septic System Yield Map
For Planning Area: Conservation and Protection Zones
(Map 5 of 5)

Source:
New Jersey Highlands Council, 2007

Legend

Roadway Network
- Interstate Highways
- U.S. Routes
- State Routes

Highlands Boundary
HUC14 Boundaries

Planning Area Zones
Septic System Yield by HUC14

Conservation Zone
Protection Zone

0 - 10
11 - 34
35 - 77
78 - 132
133 - 297

Source:
New Jersey Highlands Council, 2007

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Prepared By:
New Jersey Highlands Council
November 2007
development. Development activities will be limited and subject to stringent limitations on consumptive and depletive water use, degradation of water quality, and impacts to environmentally sensitive lands.

The **Existing Community Zone** consists of areas with regionally significant concentrated development signifying existing communities. These areas tend to have limited environmental constraints due to previous development patterns, and may have existing infrastructure that can support development and redevelopment provided that such development is compatible with the protection and character of the Highlands environment, at levels that are appropriate to maintain the character of established communities.

The **Existing Community Zone – Environmentally Constrained Sub-Zone** consists of significant contiguous critical habitat, steep slopes and forested lands within the Existing Community Zone that should be protected from further fragmentation. They serve as regional habitat “stepping stones” to larger contiguous critical habitat and forested areas. As such, they are not appropriate for significant development, and are best served by land preservation and protection. Development is subject to stringent limitations on consumptive and depletive water use, degradation of water quality, and impacts to environmentally sensitive lands.

The **Lake Community Sub-Zone** consists of patterns of community development that are within the Existing Community Zone within 1,000 feet of lakes. The Highlands Council focused on lakes that are 10 acres or greater and delineated lake management areas consisting of an area of up to 1,000 feet (depending on the protection focus) from the lake shoreline in order to protect water quality, resource features, shoreline development, recreation, scenic quality and community character. A future management area is planned, encompassing the full lake watershed, for protection of the lake water quality. This zone has unique policies to prevent degradation of water quality and watershed pollution, harm to lake ecosystems, and promote natural aesthetic values within the Existing Community Zone.

In terms of the overall breakdown of the Highlands Region by each of the Land Use Capability Zones (see table **Land Use Capability Zone Map – Acres and Percentages by Zone** the Highlands Council found that nearly 75% of the Highlands Region is either in the Protection Zone or one of the three Sub-Zones (Existing Community-Environmentally Constrained, Conservation-Environmentally Constrained, or Lake Community).

### Land Use Capability Zone Map – Acres and Percentages by Zone

<table>
<thead>
<tr>
<th>Land Use Capability Zone Map</th>
<th>Highlands Region</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (acres)</td>
</tr>
<tr>
<td>Protection</td>
<td>469,462</td>
</tr>
<tr>
<td>Existing Community</td>
<td>146,011</td>
</tr>
<tr>
<td>Existing Community - Environmentally Constrained Sub-Zone</td>
<td>32,231</td>
</tr>
<tr>
<td>Lake Community Sub-Zone</td>
<td>20,695</td>
</tr>
<tr>
<td>Conservation</td>
<td>70,474</td>
</tr>
<tr>
<td>Conservation - Environmentally Constrained Sub-Zone</td>
<td>120,485</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>859,358</strong></td>
</tr>
</tbody>
</table>

An analysis of the composition of land use within each of the Land Use Capability Zones (see tables **Land Use Characteristics by Land Use Capability Map Zone** illustrate that the Protection Zone includes most of the forest, water and wetlands. The composition of the Existing Community Zone includes most of the residential, commercial and industrial uses, while the Existing Community – Environmentally Constrained Zones includes mostly forest, water and wetlands demonstrate the existence of natural resources within an otherwise developed landscape. The Conservation Zone includes the vast majority of the agricultural uses within the Highlands Region.
### Highlands Final Draft Regional Master Plan

**Land Use Characteristics by Land Use Capability Map Zone**

<table>
<thead>
<tr>
<th>Land Classification (2002)</th>
<th>Protection Zone</th>
<th>Conservation Zone</th>
<th>Existing Community Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (acres)</td>
<td>Percent of Land Class</td>
<td>Area (acres)</td>
</tr>
<tr>
<td>Residential</td>
<td>42,124</td>
<td>27.16%</td>
<td>13,804</td>
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<tr>
<td>Commercial</td>
<td>1,668</td>
<td>11.06%</td>
<td>857</td>
</tr>
<tr>
<td>Industrial</td>
<td>689</td>
<td>12.80%</td>
<td>374</td>
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<tr>
<td>Other Urban</td>
<td>13,068</td>
<td>32.13%</td>
<td>2,890</td>
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<tr>
<td>Agriculture</td>
<td>12,686</td>
<td>11.56%</td>
<td>40,297</td>
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<tr>
<td>Forest</td>
<td>314,091</td>
<td>78.06%</td>
<td>6,699</td>
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<tr>
<td>Water</td>
<td>23,246</td>
<td>71.43%</td>
<td>924</td>
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<tr>
<td>Wetlands</td>
<td>58,411</td>
<td>64.84%</td>
<td>3,890</td>
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<tr>
<td>Barren Land</td>
<td>3,479</td>
<td>41.22%</td>
<td>737</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>469,462</strong></td>
<td><strong>--</strong></td>
<td><strong>70,474</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Land Classification (2002)</th>
<th>Existing Community - Environmentally Constrained Sub-Zone</th>
<th>Conservation - Environmentally Constrained Sub-Zone</th>
<th>Lake Community Sub-Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (acres)</td>
<td>Percent of Land Class</td>
<td>Area (acres)</td>
</tr>
<tr>
<td>Residential</td>
<td>64</td>
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<tr>
<td>Commercial</td>
<td>4</td>
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<tr>
<td>Industrial</td>
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<td>0.00%</td>
<td>51</td>
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<tr>
<td>Other Urban</td>
<td>691</td>
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<td>1,137</td>
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<tr>
<td>Agriculture</td>
<td>591</td>
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<td>53,665</td>
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<tr>
<td>Forest</td>
<td>23,443</td>
<td>5.83%</td>
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<tr>
<td>Water</td>
<td>1,284</td>
<td>3.94%</td>
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<tr>
<td>Wetlands</td>
<td>5,524</td>
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<tr>
<td>Barren Land</td>
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<td>503</td>
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<td><strong>TOTAL</strong></td>
<td><strong>32,231</strong></td>
<td><strong>--</strong></td>
<td><strong>120,485</strong></td>
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</table>

<table>
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<tr>
<th>Land Classification (2002)</th>
<th>Highlands Region</th>
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<tr>
<td></td>
<td>Area (acres)</td>
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<tr>
<td>Residential</td>
<td>155,069</td>
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<td>Commercial</td>
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<td>Industrial</td>
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<td><strong>TOTAL</strong></td>
<td><strong>859,358</strong></td>
</tr>
</tbody>
</table>

82
The Highlands Act recognizes that implementation of the Regional Master Plan, which directs and guides future development, inevitably has an impact on landowner expectations regarding future land use potential. The Act provides several mechanisms that seek to mitigate such impacts, including, but not limited to transfer of development rights, exemptions, waivers, and land acquisition. The transfer of development rights, exemptions and waivers are discussed below. Land acquisition is detailed in Sections 1 and 3.

Subpart a. Transfer of Development Rights

Transfer of development rights (TDR) is a land use tool that permits the transfer of development potential from areas identified for preservation, called sending zones, to areas that are more appropriate to accommodate increased growth, called receiving zones. Landowners in the sending zones receive compensation for the transferable development potential of their property that has been restricted in support of preservation. Payment for this lost development potential comes from purchasers who buy credits representing the lost development potential of parcels in the sending zones. The credits then entitle the purchaser to build in a receiving zone at a density greater than that permitted in the existing zoning.

TDR has become an increasingly popular land use tool to preserve lands containing sensitive resources, whether those resources are environmental, agricultural, or historical. In New Jersey, TDR programs have been established for a number of purposes, including preserving farmland to maintain agricultural viability, and protecting ecologically important lands to maintain ecosystem health and high water quality.

Importantly, TDR recognizes that the development potential of a parcel of land may be separated from the other rights of property ownership, such as the right to possession, mineral rights, or the right to exclude others. TDR also recognizes that this development potential is transferable from one specific parcel to another. Once a parcel’s development potential is severed, the parcel is encumbered with either a deed restriction or conservation easement generally limiting its future use to its current use in perpetuity. Underlying ownership of the encumbered parcel remains with the existing landowner until he or she decides to transfer the parcel. As for the transferred development potential, once it has been redeemed, (i.e. it has been used to increase development density or intensity in a receiving zone) it can never be used again.

There are a number of essential elements to any TDR program. The first is the identification of sending and receiving zones. Sending zones represent the areas which a municipality or regional entity desires to protect. They are the areas from which development potential is transferred or sent out. Receiving zones represent those areas that will accommodate the transferred development potential. These zones should have the infrastructure capacity, ecological integrity, and real estate market to support increased development and its attenuating growth impacts. Generally, both sending zones and receiving zones are identified at the outset of a TDR program and are incorporated into the overall zoning scheme as either specific zone districts or overlay zones. Sending zone identification tends to be the simplest step in establishing a TDR program because there is usually consensus regarding the need to protect specific resources. Identification of receiving zones tends to be more difficult. In addition to determining whether a potential receiving zone has the ecological integrity and infrastructure capacity to accept increased development, there is often the political challenge of overcoming reluctance to accept additional growth. Through careful planning and public input, however, these challenges may be overcome.

Another basic component of any TDR program is a determination of what development rights are going to be severed from sending zone parcels and available for sale and use in receiving zones. The process of defining what these rights are and how many rights should be given to a particular lot is known as allocation. Once these rights are defined, often expressed in the form of credits they serve as a mechanism for the TDR development potential that is restricted on the sending zone parcel.

A TDR program must also have a process for recording, transferring, and tracking TDR credits from a parcel in a sending zone to their use in a receiving zone. Frequently, a TDR program will use a conservation restriction or easement to set forth the land uses that are prohibited and permitted on the parcel.
Many TDR programs utilize a TDR credit bank to support program administration. The bank serves as the clearinghouse for information regarding the program and administers the recording, transferring, and tracking of TDR credits. In addition to serving these administrative functions, the bank may also assist sellers and purchasers of TDR credits by providing or serving as a buyer or seller of last resort of TDR credits, or guaranteeing loans utilizing the TDR credits as collateral. The existence of a TDR credit bank establishes a degree of credibility for a TDR program particularly where the bank is able to purchase and sell credits. A TDR program relies on landowners and developers to see that there is a market for the credits, and that those credits have value. In some instances, the bank does not actively buy and sell TDR credits, but instead facilitates private transactions between buyers and sellers.

With the adoption of the Highlands Act, the State Legislature authorized the Highlands Council to establish a Highlands TDR program. This program is to be regional in scope and is to be premised on the resource assessment and smart growth component of the Regional Master Plan. The framework and parameters of the program, called the Highlands Development Credit Program, are detailed in Chapter IV, Goals, Policies and Objectives.

Establishment of the Highlands Development Credit Program has been shaped by a number of circumstances. First and foremost, the program is guided by the TDR provision of the Highlands Act. This provision includes an initial requirement that the program be consistent with the State Transfer of Development Rights Act unless otherwise stated by the Highlands Act. The provision also requires that, in establishing the program, the Council:

- Identify sending zones and voluntary receiving zones (Section13.b and c);
- Working with municipalities, identify centers, designated by State Planning Commission as voluntary receiving zones (Section 13.d);
- Develop advisory or model TDR ordinances (Section 13.f);
- Conduct a real estate analysis of the Highlands Region (Section 13.g);
- Set the initial value of a development right (Section 13.h(1)); and
- Give priority consideration to any lands that comprise a major Highlands development that would have qualified for the third exemption under the Highlands Act but for the lack of a necessary State permit. (Section 13.h(2)).

Second, the Highlands Development Credit Program has been influenced by the history and experiences of other TDR programs, particularly those in New Jersey such as the Pinelands Development Credit Program administered by the New Jersey Pinelands Commission and Pinelands Development Credit Bank.

Third and finally, program development has been affected significantly by circumstances unique to the Highlands Region. One of the first considerations is the scale of the program. Although not the largest TDR program in terms of number of acres in which development potential can be transferred, the Highlands Development Credit Program will certainly involve the largest number of municipalities. Within the Highlands Region, 88 municipalities may participate. The Highlands Act also allows for the additional 130 municipalities outside of the Region (land within the seven Highlands counties) to serve as voluntary receiving zones. Consequently, a total of 218 municipalities may be involved in the program.

Given the geographic scope of the Highlands Region, another significant consideration is the varying real estate market values that exist across the seven counties. For example, vacant property in Warren County as of 2004 had an average equalized assessed value of $15,452 per acre. In Bergen County, the comparable value was more than five times greater, averaging $84,964 per acre. Significant real estate market variability also exists among municipalities within a given county. It has been essential to consider these varied real estate values in developing the program.

Finally, significantly affecting program development is the fact that any receiving zones in the Highlands Development Credit Program are strictly voluntary. As noted above, the ability to develop with TDR credits in receiving zones establishes the demand for those credits. Without receiving zones, a market-based TDR program will not succeed. The Highlands Council has not been authorized to mandate specific receiving zones.
which municipalities must accommodate; the Highlands Council may only recommend areas that are appropriate but which the municipalities are under no obligation to accept. Fortunately, the Highlands Act provides a number of incentives to encourage municipal participation as receiving zones, and the Highlands Council has established a Receiving Zone Feasibility Grant Program to help defray costs incurred by municipalities that want to explore establishing such zones.

The technical basis and additional background information on the Highlands Development Credit Program can be found in the Highlands Council’s Transfer of Development Rights Technical Report.

Subpart b. Exemptions and Waivers

The Highlands Act provides for seventeen (17) exemptions from the provisions of the Act. If a project or activity falls within one of these seventeen exemptions, the project or activity is exempt from the Highlands Act, the Highlands Preservation Area rules adopted by the New Jersey Department of Environmental Protection (NJDEP), the Regional Master Plan, and any municipal master plan or development regulations that are revised to conform to the Regional Master Plan.

The Highlands Council conducted an analysis of four of the most important exemptions to landowners. Two of the exemptions permit the construction of a single-family dwelling on an undeveloped parcel that lawfully existed as of August 10, 2004, the enactment date of the Highlands Act. The third allows for the reconstruction and limited expansion of any building or structure for any reason within 125% of the original footprint, provided that the reconstruction does not increase the impervious surface by one-quarter acre or more. The fourth exemption permits an improvement to a single family dwelling in existence on August 10, 2004, including but not limited to an addition, garage, shed, driveway, porch, deck, patio, swimming pool, or septic system.

The analysis reveals that tens of thousands of acres throughout the Region could potentially be developed under these four exemptions; the actual potential may be constrained by existing site conditions, ownership issues, zoning and other factors. While the exemptions are one of the primary means for landowners to utilize their properties where development potential is limited by the Highlands Act, the exercise of these exemptions may result in further fragmentation of the Region’s ecosystems and the construction of additional impervious surface. Given this circumstance, the Highlands Regional Master Plan addresses the need to develop programs that attempt to mitigate these impacts, including programs to encourage non-contiguous clustering, intra-local government transfers of development rights and economic incentives.

In addition to the exemptions, the Highlands Act also provides NJDEP with the authority to grant waivers from its Highlands rules on a case by case basis under certain circumstances. Under this authority, NJDEP may issue waivers (a) where a project or activity is necessary in order to protect public health and safety; (b) for redevelopment in previously developed areas as identified by the Highlands Council, provided that the areas are either a brownfield site designated by NJDEP or a site at which at least 70% of the area thereof is covered with impervious surface; or (c) necessary to avoid a taking of property without just compensation.

Part 8. Sustainable Economic Development

This part represents the Financial Component of the Regional Master Plan. It serves in support of the Highlands Act requirement for a Cash Flow Timetable that is intended to estimate and track over time the costs associated with protecting the critical resources of the Highlands Region, in terms of costs related to Plan implementation. It also evaluates potential cost savings that may be realized by State, county, and municipal stakeholders because of modifications they may undertake Plan Conformance with the Regional Master Plan.

This part also identifies the need to monitor regional economic conditions through a series of Baseline Economic Indicators and the role of the agricultural and tourism economy of the Region. The Baseline Economic Indicators provide a profile of the economic conditions of the Highlands Region in the form of demographic and economic statistics at various windows in time that may be utilized to inform variables of the Cash Flow Timetable and analyses of fiscal impact associated with various development scenarios, including Plan implementation.
Details of the regional economic development analysis are in the Financial Analysis Technical Report.

Subpart a. Baseline Economic Indicators

One primary objective of this component is to collect regional economic and socio-economic data from a variety of sources in order to create a consolidated Highlands economic database. The regional economic perspective can serve to support trends in economic conditions, inform economic development patterns and strategies, and provide a tracking mechanism for county and municipal economic vitality. Assessing these economic conditions is important in order to address the financial implications of regional development and implementation of the Plan.

Indicators have been identified that offer applicable data to various components of the Plan. The indicators are based on standardized, and regularly reported economic indices that are available at a regional level. It was determined that traditional economic indices and property valuation statistics will provide the best indication of the health of the regional economy. Eight categories of Highlands Region baseline economic indicators have been established, including population, unemployment, households, income, property taxes, equalized property values, land transactions and building permits. These indicators will be tracked at the municipal level on an annual basis by the Highlands Council and results will be shared with Highlands counties, municipalities, and State agencies for review and consistency. The indicators will also include an evaluation of agricultural economic metrics for the Highlands Region in coordination with the United States Department of Agriculture, New Jersey Board of Agriculture, County Agriculture Development Boards and additional sources as appropriate. The role of eco-, agri-, and heritage tourism will also be evaluated in support of regional economic development initiatives and enhancement and support of existing state, regional and local initiatives.

A protocol and tracking format, called the Highlands Economic Tracking Program was developed for monitoring these indicators. Some data may be utilized to inform elements of the Cash Flow Timetable with associated financial implications, such as land valuation and land acquisition. Monitoring this type of land use information will allow the Highlands Council to more accurately gauge future growth potential, which is key to maintaining economic health and vitality in the Region. Participation in the Highlands Economic Tracking Program will also serve to provide valuable information for evaluating shared service opportunities and capital improvement planning.

Subpart b. Cash Flow Timetable

The cash flow timetable is a requirement of the Highlands Act whereby the costs to implement the Regional Master Plan and the sources of revenue to cover the costs are formally accounted for over time. One of the most important aspects of the Highlands Act is the creation of the Highlands Protection Fund. This fund is managed by the New Jersey Department of Treasury. It has been established primarily to provide financial assistance for tasks related to implementation of the Regional Master Plan, as well as to stabilize municipal budgets due to implications stemming from Plan implementation.

In each of the last four State fiscal year annual appropriations acts (2005, 2006, 2007 and 2008), the following annual appropriations were credited to the Highlands Protection Fund for an annual total of $12,000,000:

- Regional Master Plan Compliance Aid  -  $1,750,000;
- Incentive Planning Aid  -  $2,650,000;
- Highland Property Tax Stabilization Aid  -  $3,600,000;
- Watershed Moratorium Offset Aid  -  $2,200,000; and
- Pinelands Property Tax Stabilization Aid  -  $1,800,000.

1. Planning Grants

In recognition of the costs associated with municipalities and counties conforming with the Plan, the Act provided funding mechanisms to avoid placing undue financial burdens on these entities. Under Sections 13 and 18 of the Highlands Act, grants from the Highlands Protection Fund are available for distribution to
municipalities and counties that conform to the Regional Master Plan and municipalities that participate in the Highlands TDR Program. For these purposes, the Highlands Council is authorized to distribute funds only from the Regional Master Plan Compliance Aid and Incentive Planning Aid portions of the Highlands Protection Fund. The remaining funds are authorized through the Property Tax Stabilization Board and Department of Treasury. The Highlands Council has intentionally retained as much of the planning grant allocation as possible for the conformance process.

Additionally, a portion of these funds are to be used by municipalities for special projects, including the preparation of case studies on a variety of planning and environmental topics relevant to the development of the Regional Master Plan, known as Municipal Partnership Pilot Projects Grants. Topics included redevelopment, town center and transit village developments, lake management strategies, alternative wastewater treatment technologies, water management plans, growth management strategies, eco-tourism, open space preservation, and historic preservation. Most of these studies were selected to be performed based on their anticipated applicability to other towns and counties in the Highlands Region. The Highlands Council also made funds available specifically for the purpose of assisting constituent municipalities in addressing their affordable housing requirements in accordance with the New Jersey Council on Affordable Housing (COAH), including substantive certifications and third round obligations ($12,500 per municipality for substantive certification applications and $7,500 per municipality for third round submissions). Last, the Council made grants available to the seven Highlands counties to conduct planning necessary for the development of the Regional Master Plan including digital parcel mapping, infrastructure mapping, and an inventory of prior land use approvals. The Highlands Council also intends to award incentive grants in the future for matters such as implementation of transfer of development rights programs.

Since 2004, the Highlands Protection Fund has included State appropriations for compliance and incentive planning in the amount of $4,400,000 per annum ($1,750,000 per year for Compliance Aid and $2,650,000 per year for Incentive Planning Grants). The Highlands Protection Fund has a current fiscal year (FY) 2008 total balance of $16,412,056. In addition, municipalities that meet the conformance criteria outlined in Section 13.k. shall be eligible for a series of benefits including, but not limited to, TDR Incentive Grants of up to $250,000 per municipality.

The Grant Awards section shown in the table Planning Grants Timetable outlines the various Plan Conformance Grants, TDR Incentive Grants and Special Project Grants. The table indicates the Planning Grant cash flow analysis for a period beginning FY2008 and ending FY2014. The three components to the table include grant appropriations to the Highlands Council, both anticipated as well as those currently available, anticipated grant awards, and the corresponding balance carried forward.

Plan Conformance Grants will be made available during the Plan Conformance process after the adoption of the Regional Master Plan. Adequate funding is anticipated to assist municipalities and counties for the reasonable expenses associated with updating their master plans and land use regulations. The table below serves as a framework for the Highlands Council to allocate grant funds during the Plan Conformance process. The assumptions and analysis that were utilized are discussed in detail in the Financial Analysis Technical Report.

2. **Tax Stabilization**

Another factor to be tracked by the Cash Flow Timetable is the expenditure of funds earmarked for tax stabilization purposes in the Highlands Region. The current procedures established in the Highlands Act are under review by the Highlands Property Tax Stabilization Board, which is in, but not of, the New Jersey Department of Treasury, to ensure sufficient justification and documentation of valuation changes. In FY2005, Passaic County submitted five appeals attributing a decline in property value directly related to the Highlands Act. A total of $88,653.00 was provided to three municipalities to offset the loss in tax revenues.
### Planning Grants Timetable

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3. **State Aid**

While State Aid takes into account municipal, county, and school needs, the Cash Flow Timetable is primarily focused on the Municipal Government Line, as specific aid programs are directly relevant to the implementation of the Regional Master Plan. Assistance provided to municipalities as part of their State Aid allocations may include funds such as Municipal Block Grants, Homeland Security Assistance Aid, Watershed Moratorium Offsets, Extraordinary Aid, and payments in lieu of taxes for open space purchased by the State under the Garden State Preservation Trust program.

4. **Land Acquisition**

The Cash Flow Timetable will also track and monitor sources of funding for the Highlands Land Acquisition program. This includes grants, donations, and loans from local, State, and federal agencies, and other governmental entities and programs, such as the Transfer of Development Rights Program. In order to estimate the funds required for land preservation, the Financial Component includes an examination of recent trends in acquisition cost by existing land preservation programs, including Green Acres and the State Agriculture Development Committee (SADC).

**Subpart c. Recreation and Tourism**

With many areas of protected open space, panoramic views, and a rich history that spans from colonial times to the industrial era to the present, the Highlands offers residents and visitors a variety of recreational and tourism opportunities within a landscape that reflects history, exhibits scenic beauty, and provides outdoor recreational activities. Tourism is a major component of New Jersey’s economy. It is the second largest industry in the State, accounting for extensive revenue and tourism-related jobs. Strategically located between New York City
and Philadelphia, New Jersey is well positioned to take advantage of a significant tourism market. The Highlands Region, located within this market, is within a day’s drive of over 20 million people.

The extensive and varied recreational, agricultural, cultural, historical, and scenic resources contained within the Highlands Region represent a substantial foundation for a regional tourism economy. It also serves the local population with many active and passive recreation facilities close to home.

Outdoor recreation and the tourism associated with it involve the interaction of people with an outdoor environment during their travel and leisure time. Outdoor recreation consists of active pursuits such as sports and games, as well as less active, more restorative activities such as walking in the woods or bird watching. Outdoor resources accommodate two types of recreation activity: resource-based recreation and facility-based recreation. A community should have a mix of resource-based and facility-based recreation opportunities for its residents.

Enjoyment of resource-based recreation activities is directly linked to the health of the outdoor environment. Hikers, canoeists, cross-country skiers, and campers enjoy their experiences if the environment is clean and healthful. Fishing enthusiasts rely on clean water to support the trout they catch. If a stream’s water is degraded such that fish cannot survive, fishing is in jeopardy. Resource-based recreation is dependent on a healthy environment.

Facility-based recreation is accommodated through a built facility. Typical facility-based recreation activities include indoor ice-skating, pool swimming, and sports requiring a field or court. Generally, the location of these facilities is less dependent on the natural surroundings than other forms of recreation. A tennis court can be built in the middle of a neighborhood, downtown, or in a barn in the countryside.

Agri-tourism represents an important and growing component of Highlands tourism. Agri-tourism is both a marketing strategy for farmers to expand their economic base and a recreational outlet for visitors to enjoy and share in the flavor of the farm environment. Tourist destinations associated with agricultural activities are available at approximately 60 farms which market opportunities for agri-tourism in the form of pick-your-own, farm tours, roadside markets, hayrides, corn mazes, petting farms, and Christmas tree farms. Additionally, full-scale vineyards, offer tours, tastings, grape stomping, festivals, and other tourist amenities.

The technical basis and additional background information on recreation and tourism analysis can be found in the Highlands Council’s Historic, Cultural, Scenic, Recreation, and Tourism Technical Report.

Part 9. Air Quality

Air quality is directly correlated with on-road mobile sources such as automobiles, buses and trucks, however, air toxics also come from many other sources, including industrial facilities, utilities, commercial businesses, residential activities, and non-road mobile sources. Therefore air quality in the Highlands Region is influenced by mobile and stationary sources within and outside the Region. In 2004, 48 facilities reported releases in the Highlands Region. Five of these facilities that release more that 10,000 pounds per year of air toxics (all chemicals combined) account for over four-fifths of the point (industrial facilities and power plants) source releases in the Highlands Region. Haze consists of air pollutants from a variety of natural and manmade sources including windblown dust and soot from wildfires, fireplaces, motor vehicles, electric utility and industrial fuel burning, and manufacturing operations. Power plants located outside the State also have a great impact on air quality in the Highlands Region.

Automobiles in New Jersey contribute 40% of the airborne pollutants and more than 80% of the airborne carcinogens. Since the Highlands Region is currently an air quality non-attainment area, federal guidelines require that new transportation plans and projects do not further contribute to air quality degradation.

Under the Federal Clean Air Act (1970, amended 1990), the United States Environmental Protection Agency (USEPA) is required to set National Ambient Air Quality Standards (NAAQS) for pollutants. The USEPA has set NAAQS for six criteria pollutants, including ozone (O₃), particulate matter (PM) carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen oxides (NOₓ) and lead (Pb). Portions of New Jersey are in non-attainment (exceeds the NAAQS) for ozone, particulate matter and sulfur dioxide.
Ozone occurs naturally in the upper regions of the atmosphere and is critical to shielding the earth from harmful ultraviolet radiation. However, in the lower atmosphere where breathing air occurs, ozone is a harmful air pollutant, contributing to the formation of smog. Ground-level ozone is formed when pollutants such as volatile organic compounds (VOCs) and NOx emitted by automobiles and industrial facilities, chemical solvents, and other sources react in the presence of sunlight. The northern New Jersey-New York-Connecticut Non-attainment Area includes the Highlands Region.

Particulate Matter is a mixture of fine liquid and solid particles such as dust, smoke, mist, fumes, or soot that pollutes the air and water, causing serious health problems. Major contributors of particulates from in-State sources include diesel exhaust from on-road vehicles and wood smoke. Within the Highlands Region, Bergen, Passaic, Morris, and Somerset counties are designated non-attainment areas for PM, while Sussex, Warren, and Hunterdon counties are in attainment.

Sulfur Dioxide gases are formed when coal and oil fuel containing sulfur is burned. SO2 emissions from upwind power plants can be transformed into particulate matter and accounts for about half of the fine particulates in New Jersey’s air. High concentrations of SO2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Within the Highlands Region, only the municipalities of Belvidere, Harmony, Oxford, White, and portions of Liberty Township in Warren County are non-attainment for SO2, primarily due to emissions from two power plants located in Pennsylvania. Through coordination with federal, regional, state, county and local agencies and entities and in accordance with Regional Master Plan policies the Highlands Council will monitor and support the protection of regional air quality. (See the Transportation System Preservation and Enhancement Technical Report for further information.)
 CHAPTER III. REGIONAL AND LOCAL COMMUNITY CHARACTER

Part 1. Introduction

The Governor and Legislature of the State of New Jersey have recognized that the Highlands Region is a unique part of the State of New Jersey where several distinct geographic elements are bound together by hydrology, topography, geography, and history. The Highlands Region is comprised of several different landscape types, each with its own intrinsic value. The value and sustainability of the Region as a whole must be represented by interdependence, or a shared set of principles, between and within all landscape types.

The Highlands Region is distinct in many other ways, including:

- Although the Region was first settled more than 200 years ago, 75% of the land in the Region is still undeveloped;
- Approximately 32% of the undeveloped land in the Region is protected open space;
- More than 30,000 acres (3.5% of the Region) have been preserved for the sustainability of agricultural activities;
- Upland forests occupy 47% of the Region;
- Field crops occupy approximately 8% of the Region;
- The Region has approximately 821,000 residents, most along the eastern and southern edges;
- 57% of all developed land is low density residential land use;
- Median household income is 34% higher than New Jersey as a whole;
- Despite proximity to the New York metropolitan area, the Region and its constituent communities are largely self-sufficient and free-standing;
- Although residential densities in the developed portions of the Highlands Region are typical of suburban development, the community character of the residential portions of the Region consist of individual small towns and villages surrounded by agricultural and forest lands interspersed with low density residential development;
- Woodlands, forested ridges, steep slopes, water features, and agricultural fields have historically maintained the separate identities of individual communities and their sense of place;
- The historical, localized, and small scale/incremental development patterns and practices of the Region have created an attractive, diverse residential landscape which is defined in large part by forested lands and mature trees;
- The Region’s topography begets winding roads with shortened sight distances where forested lands and mature trees or open agricultural fields are the predominant element of the landscape as it is viewed from public roads; and
- The historical development pattern and diversity of housing designs and materials has given the Region a residential landscape which has an organic and diverse quality as compared to the repetitive nature of subdivision development.
Part 2. Physical Geography and Landscape

The northern portion of the Highlands Region is characterized by steep slopes, narrow valleys, and rocky terrain while the southern portion is characterized by valleys that are generally wider with richer soils suited for agriculture (see figure Highlands Region Topography). The predominate landscape in the Region is forest and more than 62% of the Region is considered to be critical wildlife habitat for (1) federally listed threatened or endangered species; (2) state threatened and endangered species; and (3) state species of special concern.

Most of the land in the northern third of the Highlands Region is within the Highlands physiographic province and within the Preservation Area, with a small area to the northwest in the Valley and Ridge province, characterized by a series of valleys and ridges aligned generally along a northeast to southwest axis. Historic settlement patterns reflect this orientation as development followed valleys and water courses. Topography and geology served as a natural limiting factor with regard to land use and transportation in most of the northern part of the Region, contributing to what is a sparsely settled landscape. The Highlands Region here is heavily forested and is an important source water area for the Region and for substantial portions of urbanized New Jersey.

The middle third of the Highlands Region is a primarily man-made landscape. While dominated by suburban densities, the area has created and maintained much more local character than is typical in many other suburbs. This lack of “scatterization” is due to historical mobility constraints related to this portion of the Region’s geography (e.g., ridgelines and valley floors), and to the central role of traditional town centers in defining the area’s identities as traditional communities of place. This area generally follows the path of Route 46 thru Morris County, along the Rockaway River.

The southern third of the Highlands Region is glaciated plain and terminal moraine characterized by soils and topography which are more supportive of agriculture. Historic settlement patterns in this area were typical of an agricultural landscape, which at one time was the predominant landscape in much of the State. This portion of the Highlands Region is defined by a landscape mosaic of agricultural lands and forests.

As a whole, the Highlands Region is characterized by a number of landscapes:

- Intact forests and associated natural systems;
- Sparsely settled, very low density forested areas;
- Traditional agricultural/rural landscapes;
- Low density residential development organized along winding roads and around historic villages and towns;
- Lake communities; and
- Residential subdivisions and strip commercial not representative of unique characteristics of the Region.

Part 3. Shared Values

The developed portions of the Highlands Region exhibit shared values despite being represented by a variety of landscapes such as the large forests bifurcated by State Route 23; the historic mill towns of Morris County surrounded by winding tree-lined roads where single family homes are set back far from the road on large, mostly forested lots; the lake communities around both large recreational lakes and smaller, private lakes; the rolling hills around the rural agricultural landscape of Long Valley; the business highway development along Highway 31 between Clinton and Washington; and by everything in between.

Despite differences between these landscapes, each share and contribute to a series of regionally and locally significant values. The Region’s developed landscapes are considerably independent and free-standing as opposed to typical suburban landscapes which are socially, culturally, and economically dependent on a core urban center. The Highlands Region undoubtedly benefits from proximity to the New York metropolitan area; close enough to gain from one of the world’s most dynamic urban economies, but not so close as to be defined by suburbs dependent upon that area. The Highlands Region is separated from New York City both by distance and topography. The relative isolation of Highlands Region landscapes and associated communities is beneficial because of their interdependency on one another for employment, shopping, health care, recreation, and entertainment.
Consequently, the function and character of historical settlements are vital and continue to be central to the character of the Region.

Highlands Region communities share a value with regard to protecting water resources. Water has long been recognized as a defining attribute of the Region, a resource which does not follow political boundaries. The importance of water to the Highlands Region is significant in several different ways. The Region provides the primary source of potable water for the majority of the urbanized population in northern New Jersey and thus represents a matter of public trust. Surface water and ground waters significantly contribute to the functional integrity of the Region’s forests, ponds, streams, lakes, and wetlands which constitute a majority of the Region’s critical wildlife habitat. Upon arrival of European settlers to the Region, water guided the settlement patterns through the formation of industry-related villages, such as mill towns, mining areas, and early agricultural areas, all of which were dependent on abundant sources of water. This settlement pattern continues to serve as the physical framework of Highlands Regional landscape types. Historic mining, quarrying, and manufacturing have influenced settlement patterns and represent potential water quality issues to existing and future populations. Lakes played a key role in the development of lakeside communities in the Highlands, representing an important residential and recreational resource for the greater northern New Jersey region.

The water resources of the Highlands Region are important not only as a potable water supply source, but as a defining element of ecosystem form and function within the Highlands. They include extensive reservoirs with the capacity to provide more than 600 million gallons per day of drinking water, large rivers and lakes, streams that support trout production and supply local recreation opportunities, forested headwater streams and springs, and ephemeral waterbodies that are critical to the survival of a variety of the Region’s wildlife.

The vast majority of Highlands Region reservoir capacity is exported to urban and suburban areas of northern and central New Jersey. The water needs of the Highlands Region itself are primarily served by well withdrawals of ground water from local aquifers, and by smaller surface water bodies. Maintaining the integrity of water resources of the Highlands Region provides for the protection and sustainability of surface waters supplying reservoir systems, ground water supplying potable uses, and ecosystems dependent upon both surface water and ground water for essential functions.

The Highlands Region communities share this value by participating as stewards of the quality and quantity of this significant water source. Historically, this responsibility was a natural byproduct of the form and function of settlement in the Region. The character, location, and intensity of historical residential development patterns within the Region were such that water quality and quantity were naturally sustainable. Moreover, the significance of the Region’s water resources played an important role in the conservation of considerable open space over the past several decades. More than 50,000 acres of land have been explicitly preserved by the State, Highlands Region counties and municipalities, and other governmental and nongovernmental entities to protect the principal source of water supply in northern New Jersey. Water supply was also one factor leading to the preservation of more than 100,000 acres of forested lands.

The communities of the Highlands Region share a value of preserved open space and the views and opportunities afforded by these preserved areas. Many communities share open space views in areas where less than 25% of the
land is developed. A ratio of undeveloped land to developed land of 3 to 1 is a particularly distinguishing regional characteristic given the location of the Highlands Region in northern New Jersey, one of the most densely populated parts of the most densely populated state in the nation. The relationship created by these shared views of open space between developed lands and undeveloped lands links the communities of the Region together because that shared, visible open space aids in the defining character of a community. Conversely, there are examples where principal access to one town passes through an adjacent town in which highway commercial development extends outward from the traditional town center, thereby altering community character and economic viability in both towns.

Yet another shared value of the Highlands Region is a settlement pattern which is organized around small towns and villages, most of which are historic or traditional communities of place. This basic settlement pattern exists throughout the Region, from the forested north, to the exurban middle, to the agricultural south. The rural landscape which surrounds the towns and villages may vary in terms of character (agricultural versus residential or forest), but the functional relationship of the rural landscape to the towns and villages is the same.

One aspect of this functional relationship between a rural landscape and its communities is that individual towns and villages are distinguished by their rural nature. Preserved forests, forested ridges, and agricultural fields often have isolated adjacent towns and villages thus preventing traditional suburban growth patterns. At the same time, this functional relationship fosters social, cultural, and economic symbiosis between the towns and villages and surrounding typically-low density residential landscapes, such that the notion of “going to town” has been sustained in much of the Highlands. Moreover, the relatively low gross intensity of land use in the Region’s town and country landscapes results in a local market for goods and services that allows local retail to co-exist with typical retail big boxes and franchise businesses, which in turn sustains the economic vitality of many locally-owned businesses in the historic and traditional towns in the Region.

Of the 859,358 acres of land in the Highlands Region, 25% are developed and 32% are protected through open space preservation. The remaining lands are forested (63%), submerged and barren (15%), and agricultural (13%). A majority of the developed lands in the Region, 57%, is zoned for low intensity, single family residential areas with a density range of 1 dwelling unit per 2 to 20 acres.

Approximately 821,000 people live in the Region and almost 450,000 residents live in Bergen and Morris Counties. The overall population density of Bergen and Morris Counties is 1.7 and 1.4 people per acre, respectively. However, an examination of the relationship of where people live in these counties indicates that the density of people per acre triples to 4.78 and 4.28 people per acre, respectively. This indicates that significant areas remain undeveloped in these counties. The overall population density in Hunterdon and Warren Counties is 0.48 and 0.58 people per acre. However, these counties have significantly more undeveloped land compared to Bergen and Morris Counties and people live at a lower density of 2.12 to 3.44 people per acre. In Passaic, Somerset, and Sussex Counties the overall population
density ranges from 0.74 to 0.97 people per acre, representing the mid-range of overall population density in the Highlands Region. These three counties also have significant portions of undeveloped lands and the residents typically live at densities that range from 2.86 to 5.37 people per acre.

Part 4. Water and the Highlands Region

The Highlands Region is a focus of regional planning and special land use controls in large part due to water for the public use and for Highlands Region ecosystems. The Region’s water resources are valued for water supply, ecosystem viability, and recreational and aesthetic uses. Additionally, Highlands Region lakes offer recreation opportunities, and are the defining features of many distinct communities. Highlands Region waterbodies also support the Region’s forests, wetlands, lakes and streams by serving a critical role in supporting sustainable ecological resources. Northern New Jersey would have an immensely different character without Highlands Region water resources and the landscapes they support. Degradation or excessive use of these water resources would significantly undermine New Jersey’s economic health and quality of life.

Water resources are generally categorized as surface water and ground water. Both surface water and ground water can be supplied by rainfall, and water may be exchanged between surface water and ground water systems. The use of ground water can reduce surface water flows, and the contamination of ground water can harm surface water quality (and vice versa).

Surface water in the form of streams, rivers, ponds, lakes, and reservoirs is the more obvious resource and an important part of the Highlands Region landscape. Ground water is water below the earth surface, filling the pore spaces, cracks, and fissures in soil and rock. An underground layer of permeable rock or unconsolidated materials where ground water is sufficient to provide water to wells it is known as an aquifer. Aquifers differ in value; some are very prolific, but the hard rocks that create the Region’s ridges are very poor aquifers. While ground water is often unseen it is the primary water supply to Highlands Region municipalities and provides the large majority of flows in the Region’s streams.

Forested areas and stream-side riparian areas function to protect surface water and ground water quantity through collection and infiltration of rainwater, and protection of water quality through filtration of excess nutrients, solids, and pollutants and stormwater abatement. Therefore, protection of forests and riparian areas lends to the protection of both quantity and quality of the Region’s water resources.

By law, New Jersey’s water resources are held in trust for the public, and allocated by the State for public and
private use. One reason the Highlands Region is so important to New Jersey’s economy is the presence of many large reservoirs in the Passaic River and Raritan River basins, built from the late 1800’s to the late 1900’s to supply the urban areas of northeastern and east-central New Jersey. These reservoirs, built by Newark, Jersey City, the North Jersey District Water Supply Commission, and the State of New Jersey, store high stream flows against time of drought. In total, they provide some or all of the water needed by roughly 5 million people. In addition, a few Highlands communities have their own small reservoirs. Each reservoir system has a “safe yield,” which is the amount of water it can supply during a repeat of the 1960’s drought, defined as the worst drought on record. The safe yield is protected by the State through control of other large water uses. Resurgent development in urban communities will place heavy stresses on these reservoir supplies. Although most reservoir water from the major reservoirs is exported, limited supplies have been contracted to a few communities in the eastern Highlands.

Surface waters also contribute to New Jersey’s economy as focal points for boating, fishing, swimming, and other recreation activities in lake communities. Most Highlands Region lakes are man-made and many of the earliest residential communities were established on the shores of these lakes. Surface water from streams (rather than reservoirs) is used within the Region, most often for farm and golf course irrigation and for manufacturing (often in historic river towns) rather than public supply.

Ground water is used by local communities throughout the Highlands Region as their primary drinking water supply. Nearly all of the Highlands Region population relies on ground water. In most cases wells are located near users, but in some cases water is piped miles from one part of the Region to another. Wells range in size from domestic wells for individual households to large community wells that can supply thousands of people.

Every water use has an effect on the Region’s water resources. For example, ground water supplies in many parts of the Region are already stressed or beyond capacity. Water is moved from place to place, lost to the atmosphere from evaporation or plant use, or picks up pollutants from human and natural sources. As with every region, but more intensely in the Highlands Region due to the many competing uses, the protection and careful use of water resources is critical to a sustainable society.

Part 5. The Elements of Place

The essential character of the Highlands Region is not easily reduced to an overall description. Demographic statistics explain the Region’s overall vibrant economy and relative affluence, but they do not reveal the diversity of individual community character or the overall character of the Region. The extent of forested lands in the Region is truly remarkable in terms of the context of the densely developed tri-state region surrounding the Highlands Region. The amount and distribution of forested lands within the Region is illustrated by the fact that despite more than 200 years of human activity, more than 62% of the entire Region is described as critical wildlife habitat.

In the simplest of terms, the Highlands Region is special because it is a unique composite of landscapes, natural resources, and communities not found elsewhere in the nation. And while the individual landscape types are familiar in other parts of the nation, the cumulative character of Highlands Region landscapes and their integrity is remarkably unique. To a great degree, the unique character of the Region is a product of its geography—the key element being mobility. Although the eastern reaches of the Region are relatively accessible to and from New
York City, the largest and most economically vibrant city in the United States, mobility to and through much of the Highlands Region is constrained by its topography (ridgelines and valley floors). These constraints have played a key role with regard to the character and pace of development within the Highlands Region.

**Part 6. Resource Assessment and Regional Land Use Capability**

Notwithstanding the relative integrity of the Highlands landscapes, recent trends indicate that growth pressures are overcoming the traditional forces and factors which have historically shaped the Highlands Region and its unique character. For example water use in many of the HUC14 subwatersheds in the Highlands Region is already beyond sustainable levels.

The Highlands Act requires that the Regional Master Plan include a resource assessment to provide a determination of the “amount and type of human development and activity” which can be accommodated without compromising the essential character and function of the Highlands Region. The resource assessment serves to identify a balance between the Region’s environmentally sensitive areas and the Region’s capacity for appropriate development and human activity. In addition, the Act requires that the Regional Master Plan identify scenic, aesthetic, cultural, historic, open space, farmland, and outdoor recreational resources and provide for their maintenance and enhancement.

A basic principle of ecology is that the capacity of an environment to support a population of plants or wildlife is governed by limiting factors. The development capacity of the Highlands Region is likewise governed by limiting factors, some of which relate to the natural environment, e.g. steep slopes and water quantity and quality. However, the carrying capacity of the Highlands Region is also defined by public policies enshrined in the laws and Constitution of the State of New Jersey and the Constitution of the United States.

Another factor which affects the development capacity of the Highlands Region is the community character which is highly valued by many residents of the area as underlying the quality of life of the Region. For example, even if the existing undeveloped lands in the Planning Area could be developed at a higher density without adversely affecting water quality and quantity and without destroying critical habitat, development at a denser rate requires careful management to ensure that the community character of the Region and its constituent communities of place are sustained. Some of the adverse impacts of further suburban development can be mitigated through site development standards, e.g. cluster requirements and rural design requirement. However, at some point the character and pace of suburban development, if left unchecked, may erode the character of existing communities of place. As illustrative examples of the changing nature of community character, the figures comparing land development patterns from 1930 to 2002 in Dover, Clinton Township (Round Valley Reservoir), Phillipsburg, and Lake Hopatcong provide telling stories of various Highlands landscapes (see the eight figures - *Dover Town 1930, Dover Town 2002, Round Valley 1930,*
A central element of the required resource assessment is an understanding of the definition of the essential character and function of the Highlands Region. According to the terms of the Act, this includes:

- The quantity and quality of water resources in the Highlands Region including the potable water needs of more than 4 million people who do not live within the Region;
- Large areas of contiguous forest lands;
- Critical habitat;
- Agriculture and historic resources; and
- Natural, scenic, and other resources of the Highlands Region.

Implicit in the Act are the distinctive community characters of the towns and counties in the Region because of their importance to the residents of the Region and their centrality to the resource values of the Region as a whole.

Another factor which affects the amount of development which can be supported is transportation. Mobility is vital to the success of any community and in the Highlands, like most of the United States, the private automobile is the primary source of transportation. Any assessment of the development capacity of the Highlands Region must consider the dynamic nature of traffic and road capacity. Although engineers like to speak in terms of levels of service (A to F), the reality is that the quality of life aspects of transportation involve more than quantitative analyses of road capacity at some prescribed level of service and the average number of trips generated by a unit of development. For example, intact historic towns and villages routinely fail to meet the engineer’s level of service standards, particularly during peak hours. Nevertheless in such situations, the value of community character outweighs the inconvenience of delay, particularly when the view from the car is a traditional town where the people on the sidewalks and in the stores are friends and neighbors. Studies from around the country show that in the main, Americans select the character of a route over the speed and convenience of a route. In addition, trip-making behavior is not the fixed statistic of the traffic engineer. Where the trip to town is slow because of capacity constraints, residents make good use of a single trip instead of making multiple trips to town. Indeed, capacity constraints encourage multiple purpose trips where a shopper walks to several different shops from a single parking space, a circumstance which supports traditional town character and values. It is essential that provision be made for the movement of emergency vehicles during peak hours of congestion, but there are usually ways to assure access without subordinating community character to the private automobile. That does not mean that traffic congestion is not problematic, but rather to say that the transportation calculus involves more than trip generation rates and highway capacity.

The amount and type of development which can be supported varies according to location and community character. For example, the Highlands Act limits the capacity of undeveloped lands in the Preservation Area to existing uses, exempt development, and agriculture. Similarly, the Act limits the capacity for additional development in previously developed portions of the Preservation Area to brownfields or areas where at least 70% of the land area is covered with impervious surfaces, and also limits development by the pull back of water and sewer service areas to areas with utility pipes in the ground. Finally, additional development in the Highlands Region is limited by the reality that there is little vacant land that would meet the requirements of the Act to have at least 70% coverage with impervious surfaces as available for infill development. Consequently, future redevelopment potential is primarily in the form of
redevelopment constrained by local community character values, availability of potable water capacity, environmentally sensitive areas, and capacity of roads or transit to support additional trips or riders.

The amount of exempt development rights in undeveloped lands in the Preservation Area is considerable in the context of historical growth rates. Available data analyzed by the land use modeling software indicates that there are over 20,000 parcels of land which may be eligible for an exemption for a single family dwelling on vacant land. While some of those parcels are land locked, located on steep slopes, or otherwise constrained, so that as a matter of practical economics they are unlikely to be developed, the land supply constraints resulting from the implementation of the Highlands Act will foster the development of these exempt parcels over time.

The amount of development which could be accommodated within areas previously developed in the Preservation Area will vary according to the community character of municipalities and counties. The character and resource value of intact historic towns and villages are sensitive to infill and redevelopment and are likely to limit the amount of additional development. Several communities, that have initiated local revitalization efforts, such as Phillipsburg, Dover, Morristown, Boonton, Washington Borough, Stanhope, and Netcong Borough, offer potential opportunity for redevelopment, provided that water, sewer, and transportation capacity is available.


The Regional Master Plan contemplates a future regional and community character that is a measured extension of the existing condition where the functional values of the land and water resources of the Region are maintained, and wherever possible, restored and enhanced; and regional and community character are also maintained and enhanced. Five fundamental principles govern the future of the Highlands Region:

1. Preserve and protect the resources of the natural and built environment, especially land and water resources;
2. Restore and enhance those aspects of the natural and built environment which have been compromised by prior use and development;
3. Maintain and enhance the fiscal and economic viability of the Region and its constituent communities;
4. Distribute the benefits and burdens of implementing the Regional Master Plan equitably among all affected interests both within and outside the Highlands Region; and
5. Ensure that all new growth and development is sustainable over the long term based on water, energy, and other critical resources, is organic to its environment, harmonious with historical settlement patterns, and is compatible with the history and character of the regional communities of place.

These principles are applicable to both the Preservation Area and the Planning Area; however, the treatment of these two areas in the Highlands Act dictates differing approaches to implementation of the programs of the Regional Master Plan. Section 10 of the Highlands Act outlines the goals of the Regional Master Plan with respect to the entire Region, illustrated by Region-wide goals for both the Preservation Area and Planning Area (see table Goals of the Highlands Act for the Preservation and Planning Areas). More protective goals that promote preservation of Region’s unique resources are outlined specific to the Preservation Area, while goals that promote a balance of environmental protection and sound land use planning are outlined specific to the Planning Area.
Goals of the Highlands Act for the Preservation and Planning Areas

**Region-wide Goals for Preservation Area and Planning Area**

- Protect, restore, and enhance the quality and quantity of surface and ground waters
- Preserve farmland and historic sites and other historic resources
- Preserve outdoor recreation opportunities, including hunting and fishing, on publicly owned land
- Promote conservation of water resources
- Promote brownfield remediation and redevelopment

<table>
<thead>
<tr>
<th>Goals Specific to Preservation Area</th>
<th>Goals Specific to Planning Area</th>
</tr>
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<tbody>
<tr>
<td>Preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state, thereby ensuring the continuation of Highlands environment which contains the unique and significant natural, scenic, and other resources representative of the Highlands Region</td>
<td>Preserve to the maximum extent possible any environmentally sensitive lands and other lands needed for recreation and conservation purposes.</td>
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<tr>
<td>Protect the natural, scenic, and other resources of the Highlands Region, including, but not limited to contiguous forests, wetlands, vegetated stream corridors, steep slopes, and critical habitat for fauna and flora</td>
<td>Protect and maintain the essential character of the Highlands environment</td>
</tr>
<tr>
<td>Promote compatible agricultural, horticultural, recreational, and cultural, uses and opportunities within the framework of protecting the Highlands environment</td>
<td>Promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses and opportunities</td>
</tr>
<tr>
<td>Prohibit or limit to the maximum extent possible construction or development which is incompatible with preservation of this unique area</td>
<td>Encourage, consistent with the State Development and Redevelopment Plan and smart growth strategies and principles, appropriate patterns of compatible residential, commercial, and industrial development, redevelopment, and economic growth, in or adjacent to areas already utilized for such purposes, and discourage piecemeal, scattered, and inappropriate development, in order to accommodate local and regional growth and economic development in an orderly way while protecting the Highlands environment from the individual and cumulative adverse impacts thereof</td>
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<td></td>
<td>Promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility in the Highlands Region</td>
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**Region-wide Goals**

Although the Highlands Act divides the Highlands Region into two distinct sub-areas, the Preservation Area and the Planning Area, the elements of the natural and built environment do not stop at jurisdictional boundaries, and do affect the entire Region. The Highlands Act directs the Regional Master Plan to protect and enhance the significant values of the Region both through Region-wide goals and goals specific to the Preservation Area and Planning Area that are distinct, yet reflect similarities in concept and intent.
The Regional Master Plan fulfills the requirement for Region-wide goals prescribed in the Highlands Act by establishing goals, policies, objectives, and program areas for the protection, restoration, and enhancement of surface and ground water quality; for the preservation of the Region’s agricultural areas and significant historic areas; for the public preservation of open space; for water use conservation methods; and for brownfield remediation and redevelopment.

**Preservation Area Goals**

A critical need exists for preservation and protection of this portion of the Highlands Region. Benefits that result from preservation and protection of lands within the Preservation Area include sustainability of water supply, sustainability of biodiversity, avoidance of flooding and erosion, contribution to carbon sequestration, cleaner air, clean water, ability to obtain locally grown food, multiple opportunities for recreation close to home, and a multitude of preserved historic sites and structures, all of which combine to create a region of diverse scenic beauty and sustainable natural resources.

The planned future of the Highlands Region in the Preservation Area, outlined through the Preservation Area goals, is for all practical purposes the Highlands Region of today, a remarkable blend of natural resources and built environment which is a critical potable water source for the State of New Jersey.

In keeping with the Highlands Act’s goals for the Preservation Area, of protecting contiguous areas of land in their natural state; protecting natural, scenic, and other Regional resources; promoting compatible agricultural, horticultural, recreational, and cultural uses with the environment, the Regional Master Plan provides that new land uses in the Preservation Area be limited to:

- Land uses exempt from the provisions of the Highlands Act;
- Appropriate agricultural uses and activities;
- Very limited rural residential development or compact, existing center-based redevelopment; and
- Brownfield remediation and redevelopment.

In addition, the Regional Master Plan recognizes that regional and community character are more than what is developed, they are also defined by how development is undertaken. A single family dwelling on a forested lot along a local tree-lined road in a neighborhood surrounded by steep slopes, is different in terms of community character and regional character from a single family house separated from the road only by a manicured lawn. Although both types of development exist in Highlands Region landscapes, and both types contribute to existing community character, new development which is not sensitive to surrounding land types may diminish the character of some area, resulting in a loss of cumulative community character, which could ultimately diminish the significance of the landscape at a regional level. Consequently, the Regional Master Plan provides programs to ensure that new growth and development is compatible with the regional and local community character of the Region and does not continue the trend of sprawl type development. The Regional Master Plan also includes incentive programs intended to encourage exempted development to voluntarily comply with the goals, policies, objectives, and programs of the Plan where ever possible.

The Regional Master Plan recognizes that the integrity of natural resources, especially water quality and quantity is critically important to the Region. The Regional Master Plan provides protection for natural resources and provides guidance for how growth and development must be carefully controlled to ensure that they do not adversely affect the integrity of the Region’s resources.

**Planning Area Goals**

In addition to Region-wide goals, the Highlands Act sets forth goals specific to the Planning Area. By promoting a balance of environmental protection and sound land use, the Act requires that the Regional Master Plan provide for the preservation of environmentally sensitive lands and other lands necessary for recreation and conservation, and for the protection and maintenance of lands essential to the character of the Region while supporting new growth opportunities in the Planning Area that:

- Promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses;
• Promote brownfield remediation and redevelopment;
• Encourage, consistent with the State Development and Redevelopment Plan and smart growth strategies appropriate patterns of compatible residential, commercial and industrial development, redevelopment and economic growth while discouraging sprawl; and
• Promote a sound and balanced transportation system consistent with smart growth strategies.

The Regional Master Plan contemplates that development and redevelopment within the Planning Area incorporate development rights transferred from lands in the Preservation Area in order to mitigate any disproportionate burden imposed on Preservation Area landowners. The Regional Master Plan provides for a variety of incentive programs to encourage municipalities within the Planning Area to implement the goals, policies and objectives of the Plan and to conform to the Regional Master Plan. The Regional Master Plan promotes organic development, in the Planning Area which respects and reflects historical development practices in individual communities.

The Regional Master Plan encourages municipalities in the Planning Area to adopt and implement programs contained in the Plan with regard to protection and enhancement of the natural environment, and restrictions on the number and location of septic systems in order to ensure that new growth and development is consistent with the goals, policies and objectives of the Regional Master Plan and the community character of constituent municipalities.

The Regional Master Plan recognizes that community character within the Planning Area is an important part of the regional character of the Highlands Region. To this end, the Regional Master Plan includes detailed programs to promote development and redevelopment within the Planning Area which is compatible with that character.

### Part 8. Regional Elements

To address the mandated goals of the Highlands Act, the Regional Master Plan provides guidance for the regional elements characterized by the natural and built environment.

#### Protection of Natural Resources

The Regional Master Plan accounts for the goals of protecting that Region’s natural resources through guidance for the protection of natural and scenic resources, including forests, wetlands, riparian areas, steep slopes, critical habitat, and other environmentally sensitive areas.

#### Agriculture

The Highlands Act recognizes that agriculture is an important element of the economy, history, and essential character of the Region which should be protected and enhanced. The Regional Master Plan outlines programs to promote compatible agriculture in the Preservation Area and to promote and expand it in the Planning Area. Programs include opportunity to capitalize on agriculture as a component of new economic initiatives including
eco- and agricultural tourism. In addition, the Plan gives priority to agriculture with regard to available water capacity.

**Historic, Cultural, Archaeological and Scenic Resources**

The Regional Master Plan recognizes that historic, cultural, archaeological and scenic resources are important elements of the essential character of the Region. Protection and enhancement of these resources is critical to the long term integrity of the Region and the Plan provides multiple programs for the protection and enhancement of these resources.

**Transportation**

The Regional Master Plan recognizes that mobility is a key element of the character of the Region and includes a goal in the Planning Area for the promotion of sound, balanced transportation system that is consistent with smart growth strategies and principles. Limited access has to a large extent defined the character and function of the Region. The Regional Master Plan provides that future transportation, to the maximum extent practicable, should be directed at: 1) advocating for transportation investments that limit inter-regional transportation improvements to forms of transportation other than single occupant automobiles including modes of transportation such as rail, bus and shuttles, and 2) improving intra-regional movement of people and goods in ways that maintain community character.

The Regional Master Plan recognizes that transportation is a two-edged sword. Efficient mobility is critical to the social, cultural and economic success of every community. At the same time, new roads which expand an area’s capacity for inter-regional movements, can result in unintended consequences, including road widening which adversely affects the character of communities of place or opens up previously inaccessible rural lands for development which impairs the function and character of the landscape. The Regional Master Plan provides for future mobility improvements which enhance intra-regional movement of people and goods and discourages increases in inter-regional road capacity.

**Land Owner Fairness**

A goal of the Highlands Act is to protect undeveloped lands within the Region which have limited or no capacity to support development. The Highlands Act recognizes that implementation of the Regional Master Plan will result in adjusting landowner expectations regarding future land use potential. As a matter of fairness, reasonable future land use expectations of landowners should be mitigated to the extent possible. The Highlands Act provides several potential mitigation methods, including a transfer of development rights (TDR) program, land acquisition, exemptions, and waivers.

The TDR concept involves the transfer of development rights from lands where new growth and development is severely constrained to areas where additional development will not have an adverse impact on the important natural resources of the Highlands Region. TDRs are a recognized program which have been used to mitigate the windfalls and wipeouts of resource planning and management programs in New Jersey and around the country. TDRs are not a panacea, but they are a practical and useful way of mitigating the impact of new regulatory requirements on land owners.

The Regional Master Plan recognizes the implementation challenges which attend the creation and operation of a TDR program and contemplates that additional action will be required if TDRs are to provide significant mitigation to land owners. Those actions include the establishment and capitalization of a development rights bank to create a market in TDRs. In addition, the Regional Master Plan recognizes that transferred development rights will be accommodated if Highlands Region communities gain a dedicated source of funding to ensure adequate infrastructure to serve new growth and development using TDRs.

Additionally, the Regional Master Plan recognizes the importance of the resources of the Highlands Region to the Region itself, northern New Jersey and to the entire state, as well as to a nationally-recognized multi-state region. The Regional Master Plan proposes prioritization and acquisition of fee simple or conservation easements in the
form of open space and farmland preservation in those lands within the Region that have the most significant resources. The Plan encourages all agencies of the State of New Jersey, and the New Jersey Legislature, to invest in the future of the State by funding public acquisition of large contiguous tracts, particularly forested lands and critical habitat.

The Highlands Act outlines seventeen exemptions by which an activity would not be bound by Highlands Act, NJDEP’s rules for the Highlands Preservation Area, the Regional Master Plan, and any municipal master plan or development regulations that are conformed to the Regional Master Plan. Thousands of acres throughout the Region could be developed under the exemptions. The exemptions are a method for landowners to use their properties where limited by the Highlands Act, but the exercise of these exemptions could result in further impacts to the Region’s ecosystems and water supply areas. Therefore, the Regional Master Plan addresses the need to develop programs that attempt to avoid these impacts, such as preservation through Green Acres or the State Agricultural Development Committee, cluster type development, , intra-local government transfers of development rights, and economic incentives.

NJDEP has the authority to grant waivers from its Highlands rules to mitigate landowners’ reasonable land use expectations. Waivers are issued on a case-by-case basis where a project or activity is necessary to protect public health and safety; for redevelopment in previously developed areas as identified by the Highlands Council, or necessary to avoid a taking of property without just compensation.

**Fiscal and Economic Vitality of Highlands Communities**

The Regional Master Plan seeks to create an environment of fiscal solvency and economic sustainability for local communities. The State Legislature, through the Highlands Act, declared that the Highlands Region provides a desirable quality of life, and emphasized the importance of ensuring economic vitality in communities throughout the Region. Ideally, the Regional Master Plan will create opportunities for local communities to balance the cost of municipal services with available tax revenues. The Plan, however, recognizes that the extraordinary quality of life of the Region will require substantial revenues to support the level of services which are commensurate with character and quality of the Highlands communities.

The Plan recognizes that implementation of the Highlands Act will affect the fiscal and economic well-being of local governments within the Region. In order to ensure a desirable fiscal environment, a variety of tools were established such as Property Tax Stabilization, Incentive Planning Aid, Regional Master Plan Compliance Aid, a Legal Shield and other State Aid. The Plan also includes a number of programs, some of which require additional funding resources. These programs, once implemented, will offer significant incentives for local governments within the Planning Area to conform to the Plan.

Implementation of the Highlands Act and the Regional Master Plan will benefit water users who do not reside in the Region. It is estimated that Highlands’ water resources support 291 municipalities in the State, which represent 5.5 million people and nearly 3 million jobs. In addition, protection of resources in the Highlands Region will save the State an estimated $80 million annually in water treatment costs. It is appropriate that the cost burden of Plan implementation be shared amongst all beneficiaries, through user fees or other programs identified in the Plan.

The Highlands Region is characterized by relative wealth and economic strength. A steady growth in population and housing units has fueled overall economic growth. During the period between 1990 and 2004, the Region saw an increase of about 126,000 people, which was at a rate nearly 50% faster than the State as a whole according to United States Census Bureau. Between 1990 and 2000, the Region added 33,441 housing units, an increase of
12.7% compared to the State’s 7.6%. The median family income is more than one-third higher in the Highlands Region than in the State as a whole. In 2004, the New Jersey Department of Labor identified the annual unemployment rate as 3.7% for the Highlands Region, about a full percentage point below the rest of the State, indicative of strong labor demand.

The Regional Master Plan contemplates a shift in perspective with regard to land and land use. The story of the modern settlement of America has been, to a large degree, a story of consumption where land was treated as a commodity. For many years, the Highlands Region, as a consequence of history and geography has avoided that tendency however, recent developments suggested a trend which ignores the historical patterns of growth and the necessity of sustainable planning to meet the obligations to future generations.

**Balancing Protection of Natural Resources and Built Environments**

In order to protect natural resources and the built environment, it is necessary to address conditions and circumstances which are currently problematic, like watersheds where existing water use exceeds sustainable supply, septic systems have failed, and new growth and development has occurred in ways not consistent with the protection of environmentally sensitive areas or local community character. In addition, there are existing land uses which impose adverse impacts on a natural resources. The Regional Master Plan provides for incentive programs in the Preservation Area to encourage property owners and local communities to support remediation of existing problematic conditions. The Plan contemplates that in many cases, problematic circumstances or conditions in areas which have been previously developed could be addressed through redevelopment incentives and the use of TDRs.

Another important focus of the Regional Master Plan is the implementation of water conservation measures to address existing water availability constraints in order to allow additional development and redevelopment in watersheds with existing deficits and constraints. The Plan anticipates that water conservation measures will be a part of incentive programs for the use of TDRs or redevelopment in watersheds which have existing deficits or constraints.
CHAPTER IV. GOALS, POLICIES, AND OBJECTIVES

Part 1. Natural Resources

The natural resources of the Highlands Region join to create a landscape that supports endangered species, scenic vistas, agriculture, small towns, manufacturing and the water supplies for New Jersey’s largest metropolitan areas. Forest, waterways, critical habitats for both plants and animals, and agricultural soils are affected by and intermixed with steep slopes, limestone valleys and lake areas. In turn, these features have encouraged and shaped the prehistoric and historic pattern of human activity and settlements. Only in the last 50 years have the historic patterns been overcome by suburban patterns of development facilitated by new road systems and new zoning techniques that emphasize large lots rather than compact forms of growth. The Highlands Act was created largely to protect the Region’s natural resources and the water supplies that depend upon them. The Highlands Regional Master Plan (Plan or RMP) is a critical component of this protection effort.

Subpart a. Highlands Forest Resources

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Highlands Region, including the natural and the built environment. Forests provide essential ecosystem functions, including surface water filtration, which is important to protecting essential drinking water supplies for the Highlands Region and for the state as a whole. Forests serve as habitat for plants and animals and are critically important to the maintenance of biodiversity in one of the most populous states in the nation. In addition, when managed for sustainable use, forests can be a source of renewable wood products. Forests are a defining visible and functional feature of the Highlands and constitute a majority of critical habitat in the Region.

The Regional Master Plan acknowledges activities exempted through an approved woodland management plan and the normal harvesting of forest materials in accordance with a Forest Management Plan approved by the State Forester under N.J.S.A. 13:20-28.a(7). Beyond exempt forestry activities, the Highlands Act mandates that the Regional Master Plan provide for the protection of the Region’s forests.

<table>
<thead>
<tr>
<th>GOAL 1A</th>
<th>PROTECTION OF LARGE AREAS OF CONTIGUOUS FORESTED LANDS OF THE HIGHLANDS REGION TO THE MAXIMUM EXTENT POSSIBLE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 1A1</td>
<td>To meet the goal for the Preservation Area to “preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state,” and to “protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests.”</td>
</tr>
<tr>
<td>Policy 1A2</td>
<td>To limit human development in the Forest Resource Area in the Preservation Area in order to protect and enhance forest resources, critical habitat and the quantity and quality of water resources.</td>
</tr>
<tr>
<td>Objective 1A2a</td>
<td>Density mapping of the Region’s contiguous forested lands as the Forest Resource Area.</td>
</tr>
<tr>
<td>Objective 1A2b</td>
<td>Implementation of regulations through Plan Conformance which limit permissible uses within the Forest Resource Area to maintenance of pre-existing uses and restoration of impaired forest areas; relief from strict adherence to these standards shall be permitted only upon approval of a forest mitigation plan.</td>
</tr>
<tr>
<td>Objective 1A2c</td>
<td>To prohibit through local development review and Highlands Project Review the deforestation of lands within the Forest Resource Area of the Preservation Area for human development except where authorized as an exemption by the Highlands Act.</td>
</tr>
</tbody>
</table>
Objective 1A2d | To prohibit through local development review and Highlands Project Review the expansion of public water supply systems or public wastewater collection and treatment systems or community-based on-site wastewater facilities into the Forest Resource Area except as shown to be necessary for and is approved by the Highlands Council to support clustered development (see Objectives 2K3d and 2K3f) that cannot feasibly be located outside the Forest Resource Area or the forested portion of the Forest Resource Area, to serve a designated Highlands Redevelopment Area, to address a documented threat to public health and safety where no alternative is feasible, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of forest.

Policy 1A3 | To promote the priority use of available funding to acquire forested lands within the Forest Resource Area.

Policy 1A4 | To assign land within the Forest Resource Area a high priority for fee simple and easement acquisition.

Policy 1A5 | To prohibit through local development review and Highlands Project Review forest clear-cutting within the Forest Resource Area except in accordance with a Forest Management Plan approved by the State Forester.

GOAL 1B | PROTECTION AND ENHANCEMENT OF FORESTS IN THE HIGHLANDS REGION

Policy 1B1 | To establish and implement resource management programs to encourage sustainable forest management, restoration and stewardship practices on public and private lands in the Forest Resource Areas within the Protection Zone and the Conservation Zone in the Planning Area.

Objective 1B1a | Implementation of resource management programs to encourage sustainable forest management, restoration and stewardship practices on public and private lands, including ecological and watershed protection measures.

Objective 1B1b | Implementation of programs which encourage owners and operators of farmland with woodlots to obtain approved Forest Management Plans that conform to the protection standards of this Plan.

Objective 1B1c | Implementation of programs which encourage the inclusion of appropriate wildlife and invasive species management techniques in Forest Management Plans adopted by any federal, state, county or municipal government entity.

Objective 1B1d | Implementation of programs which encourage the application of agro-forestry practices and techniques within cultivated farmland located within both the Agriculture Resource Area and Forest Resource Area.

Policy 1B2 | To limit through local development review and Highlands Project Review human development of forests to very low impact residential development in the Protection Zone and the Conservation Zone in the Planning Area.

Objective 1B2a | Implementation through Plan Conformance of regulations which limit permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds to maintenance of pre-existing uses and permit minimal removal of woody vegetation from forested lands, subject to an approved Forest Management Plan or development that utilizes low impact development best management practices and an approved forest mitigation plan.
<table>
<thead>
<tr>
<th>Objective 1B2b</th>
<th>Implementation of regulations through Plan Conformance which allow for redevelopment of previously developed areas and for other compatible uses that minimize losses to forested lands within Low Integrity Forest Subwatersheds in accordance with an approved forest mitigation plan or low impact development best management practices.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 1B3</td>
<td>To limit through local development review and Highlands Project Review deforestation in the Forest Resource Area and forested lands within High Integrity Forest Subwatersheds within the Existing Community Zone to maximum extent practicable.</td>
</tr>
<tr>
<td>Objective 1B3a</td>
<td>Implementation through Plan Conformance of regulations which limit the clearing of trees in conjunction with human development to circumstances where the clearing will not diminish the integrity of forest resources.</td>
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<tr>
<td>Objective 1B3b</td>
<td>Implementation of resource management programs to avoid loss of forests such as low impact development best management practices and mitigation and/or restoration.</td>
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<tr>
<td>Policy 1B4</td>
<td>To encourage the restoration of forest resources through forest management and stewardship practices.</td>
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<tr>
<td>Policy 1B5</td>
<td>To ensure that forest resources are protected on a site specific basis during local development review and Highlands Project Review.</td>
</tr>
<tr>
<td>Objective 1B5a</td>
<td>Applications for local development review and Highlands Project Review require identification of any forest area on and adjacent to a site in accordance with the Highlands Council’s Alternate Method for Identifying Upland Forest Areas in the Highlands Region.</td>
</tr>
<tr>
<td>Policy 1B6</td>
<td>To establish standards and criteria for sustainable forestry activities in order to conserve and enhance the Forest Resource Areas and forested lands within High Integrity Forest Subwatersheds within the Highlands Region.</td>
</tr>
<tr>
<td>Objective 1B6a</td>
<td>Forestry activities will be allowed within a Forest Resource Area or forested lands within a High Integrity Forest Subwatershed only in compliance with an approved Forest Management Plan.</td>
</tr>
<tr>
<td>Policy 1B7</td>
<td>To prohibit clear-cutting of forest lands except pursuant to an approved Forest Management Plan to the extent necessary to promote native forest regeneration, early successional wildlife habitat, or to remove invasive species.</td>
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</tbody>
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<tr>
<th>GOAL 1C</th>
<th>CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE FOREST PROTECTION PROGRAMS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 1C1</td>
<td>To require that conforming municipalities and counties address the protection of forested portions of Forest Resource Areas and High Integrity Forest Subwatersheds in their master plans and development regulations.</td>
</tr>
<tr>
<td>Objective 1C1a</td>
<td>Maintain forest cover to the maximum extent possible in the Highlands Region in the natural as well as the built environment.</td>
</tr>
<tr>
<td>Policy 1C2</td>
<td>To develop technical guidelines and procedures to assist municipalities and counties in the development of forest mitigation and community forestry plans for inclusion in municipal and county master plans and development regulations.</td>
</tr>
<tr>
<td>Objective 1C2a</td>
<td>Technical guidelines and procedures for development and implementation of low impact development best management practices to protect, enhance and restore forest resources.</td>
</tr>
</tbody>
</table>
Objective 1C2b | Guidelines for the development of community forestry plans by municipalities for inclusion in municipal master plans.
---|---
Objective 1C2c | A model municipal tree ordinance for municipalities that allows active forest management with approved Forest Management Plans.
Objective 1C2d | Criteria for demonstrating intrinsic forest values and societal benefits that could be used to issue a Farmland Assessment Tax Credit.
Objective 1C2e | Technical guidelines establishing forest clearing thresholds for inclusion in municipal development regulations.
Policy 1C3 | To require that conforming municipalities adopt a tree clearing ordinance consistent with an approved community forestry plan under the New Jersey Forest Service Community Forestry Program as part of the municipal master plan and local development regulations.
Objective 1C3a | Standardize tree protection ordinances throughout the Highlands Region to the extent feasible.

Subpart b. Highlands Open Waters and Riparian Areas

Highlands Open Waters and their associated riparian areas are a primary focus of the Highlands Act and must be protected, enhanced and restored to ensure achievement of the Act’s goals for water quality, water supply and ecological sustainability. The Highlands Regional Master Plan focuses on four areas of action to address the need to protect, restore and enhance Highlands Open Waters and Riparian Areas:

- Identify and inventory each type of resource area;
- Evaluate the integrity of each type of resource area;
- Establish resource protection measures; and
- Establish programs to promote consistent standards for the protection, restoration and acquisition of important waters and riparian areas of the Highlands Region.

GOAL 1D | PROTECTION, RESTORATION, AND ENHANCEMENT OF HIGHLANDS OPEN WATERS AND RIPARIAN AREAS.

Policy 1D1 | To establish and maintain an inventory of Highlands Open Waters and their integrity.

“Highlands Waters” shall include all Highlands Open Waters that are located within the Preservation Area.

“Special Waters” shall include all Highlands Open Waters other than “Highlands Waters:” (1) that are designated Category One (C1); (2) that are upstream of, within the same HUC14 subwatershed, and hydrologically interconnected with C1 or Highlands Waters; or (3) that are those Highlands Open Waters within a National Wildlife Refuge or a designated Wild and Scenic River.

“Exceptional waters” shall include all Highlands Open Waters other than Highlands Waters or Special Waters that drain to a FW1 waterway or include habitat for water/wetland dependent rare, threatened, or endangered species. In addition, this will include any other waters (which are not considered Highlands Waters or Special Waters) that are upstream of and within the same HUC14 subwatershed and hydrologically connected.

“Intermediate Waters” shall include all Highlands Open Waters that are not Highlands Waters, Special Waters or Exceptional Waters.
Objective 1D1a | The Watershed Resource Value of Highlands subwatersheds shall be established through an analysis of the relative amount of developed lands, habitat quality for threatened and endangered wildlife species, total forest and core forest in each HUC14 subwatershed.

Policy 1D2 | To establish and maintain an inventory of Highlands Riparian Areas and their integrity.

Objective 1D2a | Highlands Riparian Areas shall consist of the floodprone areas, wetlands, hydric and alluvial soils and wildlife passage corridors that are associated with Highlands Open Waters.

Objective 1D2b | The integrity value of Highlands Riparian Areas shall be based upon the relative amount of impervious cover, agricultural land use, density of road crossings of streams, vegetative condition, and habitat for wetland/water dependent threatened and endangered wildlife species of riparian areas, within each HUC14 subwatershed.

Policy 1D3 | To periodically review and update, as necessary, the Watershed Resource Value and Riparian Area Integrity Values, including more stringent protection buffer requirements whenever HUC14 subwatersheds of lower value are restored to a higher value.

Policy 1D4 | Highlands Open Waters shall include a protection buffer of 300 feet from the edge of the Highlands Open Water feature. All development shall comply with buffer standards which provide for the protection of Highlands Open Waters reviewed on a site-specific basis during local development review and Highlands Project Review.

Objective 1D4a | Require that all applications for approval through local development review and Highlands Project Review include the identification and mapping of Highlands Open Waters.

Objective 1D4b | Preservation Area buffers for Highlands Open Waters shall comply with the Highlands Preservation Area rules at N.J.A.C. 7:38.

Objective 1D4c | Planning Area buffers for Highlands Open Waters shall avoid further impairment and encourage opportunities to restore ecological integrity where appropriate.

Objective 1D4d | Exceptions may be made to the 300-foot Highlands Open Water buffer in the Planning Area in the following circumstances, where the applicant further demonstrates that the exception will not cause measurable degradation to the quality and ecological integrity of Highlands Open Waters. Specifically, (1) Exceptional Waters within a HUC14 subwatershed that exhibit a Low Resource Value Watershed integrity value and a Low Integrity Riparian Area integrity may have a 150-foot protection area buffer from each edge of the Highlands Open Waters feature; and (2) Intermediate Waters within a HUC14 subwatershed that exhibit a Low Resource Value Watershed and a Low Integrity Riparian Area may have a 75-foot protection area buffer from each edge of the Highlands Open Waters feature. These exceptions will apply only where NJDEP requirements for riparian zones pursuant to the Stormwater Management Rules (N.J.A.C. 7:8) or the Flood Hazard Area Control Act Rules (N.J.A.C. 7:13) are not more stringent.

Objective 1D4e | Prohibit modifications to Highlands Open Waters protection buffers other than in Objective 1D4d, except as necessary to protect public health and safety, or to provide for minimum practical use in the absence of any alternative.

Objective 1D4f | Implement a Stream Corridor Protection/Restoration plan and Low Impact Development Best Management Practices for any development activity proposed within a Highlands Open Water buffer.
### Objective 1D4g
Require that development within the Highlands Open Water buffer of any HUC14 subwatershed with a Regional Stormwater Plan adopted pursuant to N.J.A.C. 7:8 (Stormwater Management Rules) conforms to any applicable requirements for any approval through local development review and Highlands Project Review.

### Objective 1D4h
The Highlands Council may require on a case-by-case basis an expansion of the 300-foot buffer to protect the habitat of a water or wetlands-dependant rare, threatened or endangered species, to the minimum expansion necessary to achieve protection of that species.

### Policy 1D5
Protect the integrity of the Riparian Areas through the application of RMP standards during local development review and Highlands Project Review.

### Objective 1D5a
Require that all applications for approval through local development review and Highlands Project Review include the identification and mapping of Highlands Riparian Areas, including those identified by the Highlands Council and by site-specific analysis.

### Objective 1D5b
Limit alterations to existing natural vegetation or increases in impervious area within High and Moderate Integrity Riparian Areas to the minimum extent feasible in areas beyond the Highlands Open Water buffer requirements; protect the water quality of adjacent Highlands Open Water; and maintain or restore habitat value of the Riparian Area.

### Objective 1D5c
Implement Low Impact Development Best Management Practices for any development activity proposed within a Riparian Area, which minimize both alterations of natural vegetation and increases in impervious area, and provide for mitigation through restoration of impaired Riparian Areas in the same HUC14 subwatershed.

### Objective 1D5d
Require that development within Riparian Areas of any HUC14 subwatershed with a Regional Stormwater Plan adopted pursuant to N.J.A.C. 7:8 (Stormwater Management Rules) conform to any applicable requirements for any site plan approval.

### Policy 1D6
All development in a Protection Zone and Conservation Zone shall comply with standards to protect and enhance Highlands Open Waters and Riparian Areas through local development review and Highlands Project Review.

### Objective 1D6a
Restrict new land uses or the alteration of existing land uses that would alter or be detrimental to the water quality and habitat value of a Highlands Open Water or a Riparian Area.

### Objective 1D6b
Prohibit modifications to Highlands Open Water buffer requirements or Riparian Areas, except as necessary to protect public health and safety, or to provide for minimum practical use in the absence of any alternative.

### Objective 1D6c
Require, where land disturbance is otherwise permitted, that low impact development best management practices are followed to minimize any potential for habitat or water quality impairment.

### Objective 1D6d
Require identification and implementation of opportunities where the restoration and enhancement of previously impaired Highlands Open Waters or Riparian Areas are feasible and appropriate as mitigation to any allowable modification to Highlands Open Water or Riparian Area protection buffer requirements.

### Policy 1D7
All development in an Existing Community Zone shall comply with standards which will protect and enhance Highlands Open Waters and Riparian Areas.

### Objective 1D7a
Restrict the impact of new land uses or the alteration of existing land uses that would be detrimental to the water quality and habitat value of a Highlands Open Water or a Riparian Area.
| **Objective 1D7b** | Require, where land disturbance is otherwise permitted, that low impact development best management practices are followed to minimize any potential for habitat or water quality impairment. |
| **Objective 1D7c** | Require identification and implementation of opportunities where the restoration and enhancement of previously impaired Highlands Open Waters or Riparian Areas are feasible and appropriate as mitigation to any allowable modification to Highlands Open Water or Riparian Area protection buffer requirements. |
| **Policy 1D8** | To establish priorities for preservation and restoration of Highlands Open Waters and Riparian Areas. |
| **Objective 1D8a** | Assign high priority to land acquisition and development restrictions for lands within both High Resource Value Watersheds and High Integrity Riparian Areas. |
| **Objective 1D8b** | Identify opportunities for and implement Highlands Open Waters and Riparian Area restoration practices on public and private lands that give priority to ecological and watershed protection measures. |

**Subpart c. Steep Slopes**

Steep slopes within the Highlands Region play an important ecological, recreational, scenic and functional role. Areas of steep slope provide popular recreational opportunities including hiking, climbing and wildlife observation. Ridgelines, hillsides and steep slopes provide scenic views and vistas, which contribute to the rural character of the Highlands Region and help to define the landscape. Disturbance of areas containing steep slopes can trigger erosion and sedimentation, resulting in the loss of topsoil. It can also result in the disturbance of habitats, degradation of surface water quality, silting of wetlands, and alteration of drainage patterns. These processes, when severe, can also result in land slumping and landslides that can damage both developed property and ecosystems. The identification and classification of steep slopes is important in order to effectively manage critical natural resources in the Highlands Region.

| **GOAL 1E** | **PROTECTION AND ENHANCEMENT OF THE NATURAL, SCENIC, AND OTHER RESOURCES OF THE HIGHLANDS REGION BY PROTECTION OF STEEP SLOPES FROM INAPPROPRIATE DEVELOPMENT AND DISTURBANCE** |
| **Policy 1E1** | A mapped inventory of steep slope areas in the Highlands Region showing slopes that are a minimum of 5,000 square feet and: a) 10% or greater, but less than 15%, b) 15% or greater, but less than 20%, and c) 20% and greater. |
| **Objective 1E1a** | A mapped inventory of steep slope areas in the Highlands Region showing slopes that are a minimum of 5,000 square feet and: a) 10% or greater, but less than 15%, b) 15% or greater, but less than 20%, and c) 20% and greater. |
| **Objective 1E1b** | Periodic updates and refinements to the Steep Slope Protection Area. |
| **Objective 1E1c** | Apply LiDAR to develop a 2-foot interval contour topographic map as a basis for refining the identification of Steep Slope Protection Areas. |
| **Policy 1E2** | All lands with slopes of 20% or greater and lands within Riparian Areas with slopes of 10% and greater shall be considered as Severely Constrained Slopes. |
| **Policy 1E3** | All lands other than Riparian Areas with a slope 15% or greater, but less than 20% and are forested lands shall be considered Moderately Constrained Slopes. |
| **Policy 1E4** | All lands other than Riparian Areas with a slope 15% or greater, but less than 20% and are non-forested lands with one or more of the following characteristics shall be |
considered Constrained Slopes: a) highly susceptible to erosion; b) shallow depth to bedrock; or c) a Soil Capability Class indicative of wet or stony soils.

Policy 1E5
All lands other than Riparian Areas with a slope of 15% or greater, but less than 20%, are non-forested lands, are not highly susceptible to erosion, and do not have a shallow depth to bedrock or a Soil Capability Class indicative of wet or stony soils shall be considered Limited Constrained Slopes.

Policy 1E6
To require that applications for approval through local development review and Highlands Project Review include topographic information identifying the location of any Steep Slope Protection Areas located on the parcel proposed for development.

Policy 1E7
To require that applications for approval through local development review and Highlands Project Review involving parcels of land with slopes of 10% or greater include identification of forested lands, areas which are highly susceptible to erosion, depth to bedrock and Soil Capability Classes.

Policy 1E8
To prohibit through local development review and Highlands Project Review land disturbance within areas which are Severely Constrained Slopes and Moderately Constrained Slopes.

Policy 1E9
To require through local development review and Highlands Project Review the use of low impact best development practices for any land disturbance or human development within areas which are Constrained or Limited Constrained Slopes.

Policy 1E10
To require that conforming municipalities and counties include steep slope protection provisions in master plans and development regulations.

Policy 1E11
To provide technical guidelines and assistance in support of Plan Conformance activities.

**Subpart d. Critical Habitat**

Biodiversity is the variety of plant species, animal species, and all other organisms found in a particular environment and is a critical indicator of ecological viability. The protection of habitats that are critical to maintaining biodiversity contributes to the protection of rare, threatened, or endangered plant and animal species of the Highlands Region. There are three categories of Critical Habitat Areas in the Highlands Region: 1) Critical Wildlife Habitat (habitat for rare, threatened or endangered species); 2) Significant Natural Areas (regionally significant ecological communities); and 3) Vernal Pools (confined, ephemeral wet depressions that support distinctive, and often endangered, species that are specially adapted to periodic extremes in water pool levels). Critical Wildlife Habitat and Significant Natural Areas are designated based on the presence of species of concern. Vernal pools are certified by the NJDEP, and to protect and promote the biodiversity of Vernal Pools the Highlands Council has determined that a terrestrial habitat protection buffer of 1,000 feet around Vernal Pools will generally address the habitat requirements of vernal pool-breeding wildlife. In each case, a mechanism exists by which the critical habitat area may be modified based on site-specific circumstances.

<table>
<thead>
<tr>
<th>GOAL 1F</th>
<th>PROTECTION AND ENHANCEMENT OF CRITICAL WILDLIFE HABITATS, SIGNIFICANT NATURAL AREAS, AND VERNAL POOLS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 1F1</td>
<td>To prohibit through Plan Conformance, local development review and Highlands Project Review the direct impact of new human development or expansion or increased intensity of existing development within Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools.</td>
</tr>
<tr>
<td>Policy 1F2</td>
<td>To assign land within Critical Wildlife Habitats, Significant Natural Areas, and within 1,000 feet of Vernal Pools a high priority for fee simple and/or easement acquisition.</td>
</tr>
<tr>
<td>Policy 1F3</td>
<td>To promote the restoration and enhancement of impaired lands in Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools.</td>
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<tr>
<td>Policy 1F4</td>
<td>To establish a program for habitat conservation and management including minimum standards and criteria for the protection, enhancement, and restoration of lands within Critical Wildlife Habitats, Significant Natural Areas, and within 1,000 feet of Vernal Pools.</td>
</tr>
<tr>
<td>Objective 1F4a</td>
<td>Implementation of performance standards through local development review and Highlands Project Review requiring all development to employ low impact development best management practices and avoid disturbance of a critical habitat feature whenever possible and to promote avoidance and minimize impact when disturbance is unavoidable.</td>
</tr>
<tr>
<td>Objective 1F4b</td>
<td>Implementation of performance standards which require the mitigation of disturbed critical habitat.</td>
</tr>
<tr>
<td>Objective 1F4c</td>
<td>Implementation of performance standards for the enhancement or restoration of historically disturbed critical habitat.</td>
</tr>
<tr>
<td>Objective 1F4d</td>
<td>Establishment of a Highlands Council-approved Habitat Conservation and Management Plan.</td>
</tr>
<tr>
<td>Policy 1F5</td>
<td>To require that applications for any local development review and Highlands Project Review for lands within Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools be subject to minimum standards and criteria outlined in the Habitat Conservation and Management Plan.</td>
</tr>
<tr>
<td>Objective 1F5a</td>
<td>Prohibit alteration or disturbance of Critical Wildlife Habitat, Significant Natural Areas, and within 1,000 feet of Vernal Pools, except as necessary to protect public health and safety, or to provide for minimum practical use of in the absence of any alternative.</td>
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<tr>
<td>Objective 1F5b</td>
<td>Require that any disturbance to a critical habitat feature include mitigation for all adverse modification and provide for no net loss of habitat value.</td>
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<tr>
<td>Objective 1F5c</td>
<td>Require conformance with any applicable Council-approved Habitat Conservation and Management Plan.</td>
</tr>
<tr>
<td>Objective 1F5d</td>
<td>A Vernal Pools buffer may be modified, decreasing vernal pool protection buffers, to the minimum decrease feasible, if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with NJDEP’s Endangered and Nongame Species Program, that:</td>
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<td>• In an undisturbed wetland, the existing vernal pool-breeding wildlife require a smaller protective buffer;</td>
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<td>• Existing land uses present a human, natural or development barrier to the migration or viability of vernal pool-breeding wildlife; or</td>
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<td></td>
<td>• There is a need to protect public health and safety, or to provide for minimum practical use with required mitigation, (including a habitat protection buffer in addition to mitigation), in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council.</td>
</tr>
<tr>
<td>Objective 1F5e</td>
<td>A Critical Wildlife Habitat area or Significant Natural Area delineation may be modified if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with NJDEP’s Endangered and Nongame Species Program or Natural Heritage Program, that:</td>
</tr>
<tr>
<td></td>
<td>• The nature of the site is such that it does not provide habitat for species of concern;</td>
</tr>
</tbody>
</table>
- The species of concern are not present on the site during any critical part of their life cycle, nor depend upon the site for food, shelter or breeding;
- Existing land uses present a human, natural or development barrier to the use of the site by species of concern; or

There is a need to protect public health and safety, or to provide for minimum practical use with required mitigation, (including a habitat protection buffer in addition to mitigation), in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council.

**Policy 1F6**

To prohibit through local development review and Highlands Project Review the indirect impact of any human development activity which would result in damage or destruction of habitat for rare, threatened, or endangered species of animal or plant.

**Objective 1F6a**

Prohibit the indirect impact of any activity that that is off-site, adjacent to, or within critical habitat that would result in the destruction or adverse modification of habitat for any rare, threatened, or endangered species of animal or plant.

**Policy 1F7**

To establish standards and procedures for the identification of lands where it is necessary that Critical Wildlife Areas, Significant Natural Areas, or Vernal Pool buffers be expanded in order to protect an individual species or ecological community in the event that it is determined that a larger area is required to protect the functional integrity of the habitat.

**Policy 1F8**

To establish standards and criteria for the identification of critical habitat features.

**GOAL 1G**

INCLUSION OF CRITICAL HABITAT AREA MANAGEMENT PROGRAMS IN THE MASTER PLANS AND DEVELOPMENT REGULATIONS FOR CONFORMING MUNICIPALITIES AND COUNTIES.

**Policy 1G1**

To require that conforming municipalities and counties identify Critical Habitat Areas and management programs in their master plans and development regulations.

**Policy 1G2**

To require that conforming municipalities and counties include approved Habitat Conservation and Management Plans in master plans and development regulations.

**Subpart e.  Land Preservation and Stewardship**

Public and private investment in land preservation over the years has protected nearly a third of the Highlands Region as perpetual open space. Maintaining the land in a natural condition is necessary to preserve ecosystem integrity and to protect drinking water supplies. The Highlands Act contemplates preservation of additional open space resources in order to protect and enhance ecosystem function, protect drinking water resources, and preserve natural and recreational lands. As a result, preservation of open space provides compensation to landowners through fee simple or easement acquisition.

**GOAL 1H**

PROTECTION OF CRITICAL RESOURCES THROUGH PRESERVING OPEN SPACE THROUGHOUT THE HIGHLANDS REGION.

**Policy 1H1**

To identify and maintain an inventory of private and public open space land holdings and conservation easements in the Highlands Region.

**Objective 1H1a**

Create a coordinated and continually updated open space preservation data base of preserved lands and land stewardship activities by municipal, county, state and federal agencies, non-profit organizations and individuals.
| **Policy 1H2** | To serve as a regional clearinghouse for information regarding funding sources for land acquisition, restoration and enhancement, and long-term stewardship of open space lands in the Highlands Region. |
| **Policy 1H3** | To provide assistance to land acquisition efforts of public and private organizations in order to maximize land preservation efforts in the Highlands Region. |
| **Objective 1H3a** | Creation of a 5 and 10 year priority list for lands which should be acquired in the Highlands Region. |
| **Objective 1H3b** | Creation of an open space preservation and land stewardship technical assistance program. |
| **Policy 1H4** | To identify and maintain an inventory of lands within Conservation Priority Areas which should be preserved as open space. |
| **Objective 1H4a** | Creation of a current list of lands which are 5 and 10 year priorities for land acquisition in the Highlands Region. |
| **Policy 1H5** | To promote the establishment of dedicated sources of funding for the preservation of open space lands in the Highlands Region. |
| **Objective 1H5a** | Establishment of dedicated sources of State revenue to be used for open space preservation in the Highlands Region, such as coordination with the NJDEP Green Acres Program for re-authorization of the Garden State Preservation Trust Fund, including a dedicated fund for the anticipated land acquisition needs of the Highlands Region, and enactment of a water user fee. |
| **Objective 1H5b** | Establishment of dedicated sources of State revenue for a reserve fund to capitalize the Highlands Development Credit Bank. |
| **Objective 1H5c** | Establishment of an on-going program to secure significant federal funding in support of land acquisition and stewardship efforts in the Highlands Region including, but not limited to, additional appropriations under the Federal Highlands Conservation Act. |
| **Objective 1H5d** | Establishment of an on-going program to seek funding for land acquisition and stewardship from unique sources of funding such as gifts, endowments and donations and federal and state court-imposed fines for natural resource damages. |
| **Objective 1H5e** | Establishment of a dedicated source of revenue for the preservation and land stewardship of open space through a surcharge on public water supply system rates for any system that directly or indirectly relies on Highlands water resources for more than 5 percent of their annual needs. |
| **Policy 1H6** | To promote the acquisition and protection of open space resources within the Highlands Region under existing local and State open space preservation and land stewardship programs. |
| **Objective 1H6a** | Coordination of Highlands Region priority open space preservation and land stewardship activities with the NJDEP Green Acres Program and the State Agriculture Development Committee with regard to land acquisition and preservation priorities in the Highlands Region. |
| **Objective 1H6b** | Coordination with NJDEP regarding the review of applications for Green Acres diversions for consistency with the RMP. |
| **Policy 1H7** | To promote the creation of a Highlands Water Protection and Planning Trust Fund to secure monies from alternate sources of funding to assist in land acquisition and stewardship. |
| **Policy 1H8** | To encourage municipalities and counties to establish and fund local open space acquisition and land stewardship programs or to expand existing open space and land stewardship programs. |
| **Policy 1H9** | To support legislation to extend the dual appraisal methodology used by the Garden State Preservation Trust for lands in the Highlands Region beyond the June 30, 2009 expiration date to a minimum of five years beyond adoption of the RMP. |
| **Policy 1H10** | To promote and facilitate the formation of an interagency working group comprised of representatives of appropriate federal, state and county agencies for the purpose of coordinating open space acquisition activities, including identification of high priority lands for preservation, land stewardship initiatives, and funding needs. |
| **Policy 1H11** | To identify and designate one or more Special Environmental Areas in the Preservation Area and Planning Area where development should not occur in order to protect water resources and environmentally sensitive lands while recognizing the need to provide just compensation to the owners of those lands, when appropriate, through fee simple acquisition, easement acquisition, transfer of development rights programs or other means or strategies. |

| **Objective 1H11a** | Identification and designation of Special Environmental Areas which should not be developed in order to protect water resources and environmentally sensitive lands based upon RMP Conservation Priority Area rank and the potential to protect water supply reservoirs and other critical water features, create large contiguous areas of environmentally sensitive lands, create habitat corridors, and connect to existing preserved open space. Existing land use patterns shall be considered to minimize conflicts between the designation of Special Environmental Areas and ongoing land uses. |
| **Objective 1H11b** | Establishment of a process and criteria for Planning Area municipalities to petition the Highlands Council for designation of a Special Environmental Area within the municipality not otherwise identified and designated by the Highlands Council. |
| **Objective 1H11c** | Adoption and enforcement of innovative development regulations which prohibit the development of those portions of a parcel of land which are located within a Special Environmental Area which should not be developed in order to protect water resources and environmentally sensitive lands and provide for the permanent preservation of such land areas. |
| **Objective 1H11d** | Establishment of a confidential process and criteria for listing any parcel or portions of a parcel of land located within a Special Environmental Area which should be protected through fee or easement acquisition by appropriate land preservation/acquisition agencies. |
| **Objective 1H11e** | Preparation and delivery of confidential documents to appropriate land preservation/acquisition agencies identifying parcels of land wholly within Special Environmental Areas, which should be protected through fee or easement acquisition based upon the size of the parcel, the intensity of critical areas within the parcel, and the ability of the parcel to interconnect preserved forested land, critical habitats or regionally significant scenic landscapes. |
| **Objective 1H11f** | Implementation of the Highlands Development Credit Program as a means of permanently preserving land in Special Environmental Areas. |
| **Objective 1H11g** | Creation of a landowner assistance program to provide owners of land which should not be developed in order to protect water resources and environmentally sensitive lands with technical assistance and guidance with regard to land preservation options. |
GOAL 1I  CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE OPEN SPACE PRESERVATION AND LAND STEWARDSHIP PROGRAMS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.

Policy 1I1  To require conforming municipalities and counties to include an open space preservation and land stewardship element in their master plans.

Policy 1I2  To require conforming municipalities and counties to identify and delineate existing preserved open space, including fee simple and easements, and maintain a current Recreation and Open Space Inventory (ROSI), and lands subject to land stewardship programs in their master plans and provide that information to the Highlands Council.

Policy 1I3  To require conforming municipalities and counties to require conservation or land stewardship easements as a condition of development approval for lands within parcels proposed for development that are identified for preservation on a proposed site plan or subdivision plat.

GOAL 1J  PRESERVATION OF FORESTS IN PRIVATE OWNERSHIP THROUGH CREATION OF A FOREST PRESERVATION EASEMENT PROGRAM.

Policy 1J1  To promote the creation of a Forest Preservation Easement Program for the Highlands Region, which would be eligible for use through the State Agricultural Development Committee and the Green Acres Program.

Objective 1J1a  Achieve maximum preservation of working forests through the Forest Preservation Easement Program, including public access on lands preserved through the Green Acres Program.

Subpart f. Carbonate Rock (Karst) Topography

Karst is a type of land surface, or topography, that is formed at the surface of carbonate rock formations (such as limestone and dolomite) when water dissolves the rock over time. This process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams range in size from intermittent streams to perennial rivers. They may sink through a segment of the stream bed or through a discrete opening such as a fracture or cave entrance, and then reappear further downstream. Sinkholes function as funnels, directing surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. Stormwater basins, septic system leaching fields and sewers may also contribute contaminants directly to ground water through karst features. Soils in sinkhole bottoms may be thin or non-existent. In addition to ground water concerns, communities in karst areas must contend with safety concerns as sinkholes can have damaging effects to large manmade objects. The Highlands Region has several large areas with carbonate rock formations, usually located in river valleys such as the Musconetcong, South Branch of the Raritan and Lamington. Karst features exist in some – but not all – of these areas.

GOAL 1K  PROTECTION OF GROUND WATER QUALITY AND PUBLIC SAFETY REGARDING KARST FEATURES IN THE HIGHLANDS

Policy 1K1  To map areas of the Highlands Region that are underlain by carbonate rocks to define a Carbonate Rock Area.
Policy 1K2
To identify and delineate through local development review and Highlands Project Review land areas that drain surface water into the Carbonate Rock Area, as changes in the quantity, quality and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area.

Policy 1K3
To establish and maintain an inventory of karst features in the Highlands Region.

Policy 1K4
To ensure through Plan Conformance that municipalities in, or draining to, the Carbonate Rock Area protect public health and safety and the quality of ground waters from inappropriate land uses and pollutant discharges.

Objective 1K4a
Identification of critical requirements for development review ordinances to be adopted by municipalities, and for county development review procedures regarding roads and stormwater systems at a minimum, with technical guidance.

Objective 1K4b
Applications for site plan or subdivision approval will include a multi-phased geotechnical site investigation (e.g., test borings, test pits, etc.) to locate any potential karst features and potential hazards to public health and safety, structures and ground water quality.

Objective 1K4c
Local development reviews and Highlands Project Reviews and requirements shall ensure that all potential hazards to public health and safety, structures and ground water quality are fully addressed and mitigated in the construction plans and subsequent approval process, with the maximum emphasis on nonstructural measures, including, but not limited to, avoidance of modifications to the karst features.

Objective 1K4d
Public works projects, including but not limited to water supply, sewerage, stormwater and transportation facilities, shall be constructed and maintained such that the potential for damage from karst features and the contamination of ground water are avoided.

Subpart g. Lake Management

The management of lands surrounding lakes is an important issue for the Highlands Region. Overdeveloped, damaged and poorly managed shoreland areas can result in the degradation of water quality, harm the lake ecosystem, decrease natural aesthetic values, and cause an overall loss of property values for lake communities. Lakes can be harmed by pollutant sources in the watershed area draining to them. Polluted lakes can, in turn, damage downstream streams and rivers. Most existing lake communities are fully built out, predate modern environmental protection requirements, and have limited potential for major land use changes. Some have sewer systems, but many rely on septic systems (or even cesspools) on inadequately sized lots, where direct contamination of the lakes is possible. Past NJDEP studies indicate that nearly every public lake (privately-owned lakes were not evaluated) is experiencing unacceptable contamination, often including excessive bacteria and nutrients. In addition, many lake communities have been evolving from summer communities to year-round communities, and many are experiencing greatly intensified land uses as the original buildings are torn down and replaced by much larger structures. Addressing land uses within lake communities allows for potential opportunities to improve community value, to protect natural resources and enhance and restore the quality of lake environments in the Region, and in some cases, to allow for in-fill development where appropriate.

GOAL 1L
PROTECTION OF HIGHLANDS REGION LAKES FROM THE IMPACTS OF PRESENT AND FUTURE DEVELOPMENT

Policy 1L1
To establish tiers of lake management appropriate to management strategies that help protect lake water quality and community value from the impacts of present and future development.
<table>
<thead>
<tr>
<th>Objective 1L1a</th>
<th>Lake management programs shall use the following management tiers around Highlands Region lakes of greater than 10 acres in size:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• A shoreland protection tier consisting of an area measured 300-foot perpendicular from the shoreline of the lake;</td>
</tr>
<tr>
<td></td>
<td>• A water quality management tier consisting of an area measured 1,000-foot perpendicular from the shoreline of the lake, but outside of the shoreland protection tier;</td>
</tr>
<tr>
<td></td>
<td>• A scenic resources tier consisting of an area measured 300 to 1,000-foot perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances; and</td>
</tr>
<tr>
<td></td>
<td>• A lake watershed tier consisting of the entire land area draining to the lake, through the evaluation of drainage areas using LiDAR topographic analyses or other topographic data where LiDAR data are not available.</td>
</tr>
<tr>
<td>Policy 1L2</td>
<td>To establish and implement management strategies to help protect lake water quality and ecosystem values from the impacts of present and future development for all lakes.</td>
</tr>
<tr>
<td>Objective 1L2a</td>
<td>Implementation of standards through local development review and Highlands Project Review regarding lake ecosystem and water quality in the shoreland protection tier to address direct and proximate impacts upon the lake, including but not limited to shoreline modification and development (including limits to the hardscaping of shorelines using bulkheads, rip-rap and walls), docks, piers, boathouses, dredging, vegetation removal, and increased impervious cover. Pollutant discharges shall also be addressed, including the potential for contamination from septic systems, cesspools and other wastewater management systems within the tier that are failing or are inadequately designed and constructed. As such systems fail, landowners should be required to provide upgraded treatment to minimize pollutant movement to the lake.</td>
</tr>
<tr>
<td>Objective 1L2b</td>
<td>Implementation of standards through local development review and Highlands Project Review regarding land use compatibility and water quality in the water quality management tier, to prevent or minimize continuous pollutant sources that can contribute pollutants overland or through ground water to the lake from greater distances than the shoreland protection tier.</td>
</tr>
<tr>
<td>Objective 1L2c</td>
<td>Implementation of standards through local development review and Highlands Project Review regarding the protection of visual and scenic resources in the scenic resources tier, including but limited to requirements for vegetative screening of buildings, building height limitations, and limits on tree and understory removal for reasons other than public health and safety or as the minimum necessary to make reasonable use of the designated building envelope for the parcel proposed for development.</td>
</tr>
<tr>
<td>Objective 1L2d</td>
<td>Implementation of lake restoration plans to restore, protect and, where possible, enhance lake water quality through management of pollutant sources in the lake watershed tier, including but not limited to the development, adoption and implementation of TMDLs by NJDEP pursuant to the Water Quality Management Planning Rules, N.J.A.C. 7:15.</td>
</tr>
<tr>
<td>Policy 1L3</td>
<td>To require that conforming municipalities adopt and implement for all lakes the standards applicable to the shoreland protection and water quality management tiers; the standards applicable to the scenic resources tier shall be adopted and implemented for all public lakes (i.e., with shorelines that are not entirely privately-held and managed through a lake association), and for privately-held lakes to the extent feasible under law, recognizing the existence of previously approved lake community development plans.</td>
</tr>
<tr>
<td>Objective 1L3a</td>
<td>Shoreland protection and water quality management tier requirements shall apply to all new development, regardless of lake ownership.</td>
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<tr>
<td>Objective 1L3b</td>
<td>Scenic resource tier requirements shall apply to all lakes with public access and to lakes with no public access that are not entirely managed by a single homeowner or lake community association. For lakes that are privately-held and managed by a single homeowner or lake community association, the scenic resource tier requirements shall be voluntary.</td>
</tr>
<tr>
<td>Policy 1L4</td>
<td>To require that conforming municipalities develop and adopt lake restoration plans, with sufficient input from lake community residents and landowners, for each of the municipality’s developed lakes that has been identified as water quality impaired, to include watershed delineation, description of point and nonpoint sources of pollution in the watershed, lake monitoring schedules, existing and proposed in-lake management techniques, and recommended watershed best management practices. TMDLs adopted by the NJDEP to address known pollution problems may be used as lake restoration plans. For lakes that are privately-held and managed by a single homeowners or lake community association, the municipality may require that the association share in or assume the costs of developing such plans.</td>
</tr>
<tr>
<td>Objective 1L4a</td>
<td>Provide Lake Management Plan guidance to municipalities that includes watershed delineation mapping methodology, point and nonpoint source pollution references, example lake monitoring schedule with monitoring goals and methods, existing successful in-lake management techniques, and best management practices.</td>
</tr>
<tr>
<td>Objective 1L4b</td>
<td>Septic systems and cesspools on small lots in close proximity to lakes shall be replaced with upgraded individual treatment systems, communal septic systems or community-based wastewater systems wherever feasible and cost-effective. Community-based systems should not provide for additional land development capacity except for exempt lots within that existing lake community that are not environmentally constrained, or for areas that are otherwise permitted to have wastewater service under the goals, policies and objectives in Part 2, Subpart d, Sustainable Development and Water Resources.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOAL 1M</th>
<th>PROTECT THE UNIQUE CHARACTER OF HIGHLANDS LAKE COMMUNITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 1M1</td>
<td>To provide guidance regarding evaluation of and standards for lake character and aesthetics that shall be adopted by municipal ordinance for application to public lakes, or that may be voluntarily adopted by privately-owned lake communities within their by-laws and regulations.</td>
</tr>
<tr>
<td>Policy 1M2</td>
<td>To encourage increased public access to publicly-owned lakes, within the lake’s carrying capacity and while maintaining the lake character.</td>
</tr>
<tr>
<td>Policy 1M3</td>
<td>To discourage or control teardowns that result in altered lake community character, and to encourage community-supported limitations in lot coverage and building height for new construction.</td>
</tr>
<tr>
<td>Policy 1M4</td>
<td>To establish and implement performance and development standards through local development review and Highlands Project Review for shoreline uses which achieve compatibility among shoreline activities and nearby neighborhoods.</td>
</tr>
<tr>
<td>Policy 1M5</td>
<td>To encourage municipalities to utilize recreational sites as opportunities to educate the public regarding the ecological value of lake environs.</td>
</tr>
</tbody>
</table>
Policy 1M6 | To encourage municipalities to explore appropriate means to provide public recreation at the shoreline and on the water while ensuring retention of opportunities for passive recreation (e.g., natural areas, open space).

GOAL 1N | MAINTAIN PUBLIC AND PRIVATE LAKES, OR RESTORE LAKE BEDS AND DOWNSTREAM AREAS WHEN LAKES ARE DRAINED

Policy 1N1 | To develop innovative financing and administrative mechanisms for the maintenance and operation of public and private dams and lakes, where those dams and lakes provide a continuing public or private purpose.

Policy 1N2 | To restore appropriate habitats in the lake beds and to prevent, mitigate or restore downstream habitats from damages due to lake drainage, when dams are allowed to fail or are deliberately breached or removed.

Part 2. Water Resources and Water Utilities

A fundamental purpose of the Highlands Act is to protect water supplies for human use and ecological sustainability both within and outside of the Highlands Region. The Highlands Regional Master Plan addresses five fundamental issues with regard to water resources in the Highlands Region:

- The availability of water resources for human and ecological use;
- The protection of water resource availability;
- The protection, restoration, and enhancement of water quality;
- The management of land development patterns and densities to ensure that the carrying capacity of water resources are not exceeded; and
- The cost-effective and efficient provision and use of water utility capacity in a manner that ensures compatibility with the carrying capacity of water resources.

Subpart a. Water Resources Availability

The Highlands Regional Master Plan provides a method for identifying the quantity of available water resources in the Highlands Region, which is used to identify areas where water resources are or are not sufficient to support existing human and ecological uses, and to support future uses. Where sufficient water availability exists, the method fairly allocates available water resources among future human uses as shown in the Land Use Capability Zone Map.

Policy 2A1 | To identify and periodically update net water availability and water deficits as a factor in the Land Use Capability Water Availability Map.

Policy 2A2 | To ensure that increasing water demands do not exceed Net Water Availability or exacerbate existing deficits of subwatersheds. Net Water Availability is affected at a subwatershed level by location and extent of Land Use Capability Map Zone Map and...
its status as Current Deficit Area or Existing Constrained Area.

GOAL 2B

PROTECTION, RESTORATION AND ENHANCEMENT OF WATER QUALITY AND QUANTITY OF SURFACE AND GROUND WATERS (SECTIONS 10.B(1) AND 10.C(1)), AND TO DETERMINE “THE AMOUNT AND TYPE OF HUMAN DEVELOPMENT AND ACTIVITY WHICH THE ECOSYSTEM OF THE HIGHLANDS REGION CAN SUSTAIN WHILE STILL MAINTAINING THE OVERALL ECOLOGICAL VALUES THEREOF, WITH SPECIAL REFERENCE TO SURFACE AND GROUND WATER QUALITY AND SUPPLY...” (SECTION 11.A.(1)(A)).

Policy 2B1
To track and consider water availability in local development review and Highlands Project Review.

Policy 2B2
To estimate Net Water Availability on a subwatershed basis.

Objective 2B2a
Establish Ground Water Availability thresholds for application to HUC14 subwatersheds based on the Land Use Capability Zone Map, and as modified by status as an Existing Constrained Area. Ground Water Availability Thresholds shall be determined by multiplying Ground Water Capacity by specified percentages that are related to the nature of the environmental resources and conservation objectives of the Plan for each Zone.

<table>
<thead>
<tr>
<th>Land Use Capability Zone</th>
<th>Standard Threshold</th>
<th>Existing Constrained Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Zone</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Conservation Zone</td>
<td>5% non-agricultural 10% agricultural</td>
<td>5% + 2003 Depletive &amp; Consumptive Use (up to Standard Threshold)</td>
</tr>
<tr>
<td>Existing Community Zone</td>
<td>20%</td>
<td>5% + 2003 Depletive &amp; Consumptive Use (up to Standard Threshold)</td>
</tr>
</tbody>
</table>

*Within HUC14 Subwatershed upstream of a Current Deficit Area

Objective 2B2b
Estimate Net Water Availability by subtracting from Ground Water Availability an estimate of maximum monthly consumptive and depletive ground water and surface water use (other than from reservoir storage or other supply with a NJDEP approved safe yield) for that HUC14 subwatershed.

Objective 2B2c
Adjust Net Water Availability to account for the return of wastewater discharging within the HUC14 subwatershed from which the water originated, or as appropriate within another HUC14 subwatershed.

Objective 2B2d
Identify Current Deficit Areas where the Net Water Availability is less than zero.

Objective 2B2e
Identify Existing Constrained Areas as HUC14 subwatersheds that are upstream of and contributing flow to a Current Deficit Area.

Policy 2B3
To ensure through Plan Conformance that the use of Net Water Availability within each subwatershed supports Smart Growth principles to the maximum extent possible.

Objective 2B3a
Water utilities that rely for their water sources on a HUC14 subwatershed that have a positive Net Water Availability for potable supplies shall be given priority for public...
community water systems serving the Existing Community Zone, based on the development capacity for that Zone.

**Objective 2B3b**
The remaining Net Water Availability shall be available to the remaining Protection Zone and the Conservation Zones based on the applicable threshold, relative area and development capacity for each Zone, and for agricultural uses in the Conservation Zone.

**Policy 2B4**
To require through Plan Conformance the development and implementation of Water Management Plans to address any Current Deficit Areas or subwatershed that could become deficit areas based on projected development and water uses, to ensure sustainable water supply, water resource and ecological values.

**Objective 2B4a**
Water Management Plans shall include provisions to reduce consumptive and depletive uses of ground and surface waters as necessary to reduce or prevent deficits in Net Water Availability; or to ensure continued stream flows to downstream Current Deficit Areas from Existing Constrained Areas, to the extent practicable within each zone.

**Objective 2B4b**
Proposed increases in water use, including consumptive or depletive water uses, within a Current Deficit Area or an area where the proposed increase would cause the HUC14 subwatershed to become a Current Deficit Area shall provide mitigation equal to 125% of the proposed new consumptive or depletive water uses within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means.

**Objective 2B4c**
All water users within a Current Deficit Area or Existing Constrained Area shall seek funding and opportunities to prevent exacerbation of and help reduce or eliminate existing deficits to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

**Policy 2B5**
To conditionally provide water availability within Current Deficit Area.

**Objective 2B5a**
A Current Deficit Area subwatershed that is primarily within the Existing Community Zone shall be assigned a Conditional Net Water Availability of 2 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.

**Objective 2B5b**
A Current Deficit Area subwatershed that is primarily within the Protection Zone or Conservation Zone shall be assigned a Conditional Net Water Availability of 1 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.

**Policy 2B6**
To require, through local development review and Highlands Project Review, the use of water conservation, recycling and reuse methods (where appropriate) and devices for any redevelopment or development activity, including renovations to existing residential, institutional, commercial or industrial buildings, to minimize consumptive water use tailored to meet the resource protection and other goals for each Zone and considering subwatershed-specific conditions and Net Water Availability status.

**Policy 2B7**
To require through Highlands Project Review that Wastewater Management Plans or amendments demonstrate that the proposed service area will not directly or indirectly cause or contribute to, or could help mitigate, a Net Water Availability deficit.
<table>
<thead>
<tr>
<th>Policy 2B8</th>
<th>To apply standards in the Protection Zone designed to maintain the integrity of aquatic ecosystems, recognizing the regional significance of these resources. Consumptive and depletive water uses and associated land uses shall be stringently limited.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 2B8a</strong></td>
<td>Restrict consumptive and depletive uses of ground and surface waters by HUC14 subwatershed to no more than 5 percent of Ground Water Capacity.</td>
</tr>
<tr>
<td><strong>Objective 2B8b</strong></td>
<td>Prevent net increases in consumptive and depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.</td>
</tr>
<tr>
<td><strong>Objective 2B8c</strong></td>
<td>Limit consumptive and depletive water uses in Existing Constrained Areas to 5 percent of the Ground Water Capacity to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to water reuse, recycling and conservation.</td>
</tr>
<tr>
<td><strong>Objective 2B8d</strong></td>
<td>Give highest priority for the use of Net Water Availability to Highlands Redevelopment Areas and Receiving Zones as designated by the Highlands Council.</td>
</tr>
<tr>
<td><strong>Objective 2B8e</strong></td>
<td>Ensure, through NJDEP Water Allocation regulations, that any new or increased water allocation permits do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Policy 2B9</th>
<th>To apply standards in the Conservation Zone which recognize that significant ecological resources exist in these areas and protect these resources. Agricultural water uses will also occur in these areas along with limited, low density development and appropriate redevelopment. There is value to reserving significant amounts of net water availability for agricultural operations that employ water quality protection, conservation, reuse, and recycling best management practices, and to provide specific Ground Water Availability targets to agricultural and non-agricultural water uses, to minimize the potential for conflict between these uses.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 2B9a</strong></td>
<td>Limit consumptive and depletive uses of ground and surface waters for agricultural purposes to no more than 10 percent of Ground Water Capacity, and for non-agricultural purposes to no more than 5 percent of Ground Water Capacity, based on the Low Flow Margin Method.</td>
</tr>
<tr>
<td><strong>Objective 2B9b</strong></td>
<td>Prevent net increases in consumptive and depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.</td>
</tr>
<tr>
<td><strong>Objective 2B9c</strong></td>
<td>Limit consumptive and depletive water uses in Existing Constrained Areas to the 2003 consumptive and depletive water use plus 5 percent of the Ground Water Capacity (up to the standard thresholds in Objective 2B9a) to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to, water reuse, recycling and conservation.</td>
</tr>
<tr>
<td><strong>Objective 2B9d</strong></td>
<td>Give highest priority for the use of Net Water Availability for agricultural and related water uses to those using best management practices for irrigation and other activities, and to designated Receiving Zones.</td>
</tr>
<tr>
<td><strong>Objective 2B9e</strong></td>
<td>Give highest priority for the use of Net Water Availability for non-agricultural water uses to clustered or compact development, Highlands Redevelopment Areas as designated by the Highlands Council, and designated Receiving Zones that result in the preservation of agricultural and environmentally sensitive lands.</td>
</tr>
</tbody>
</table>
Objective 2B9f | Ensure, through NJDEP Water Allocation regulations, that any new or increased water allocation permits do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.

Policy 2B10 | To apply standards within the Existing Community Zone to provide for the protection of water supply, water resources and ecological values of the Region.

Objective 2B10a | Limit consumptive and depletive uses of ground and surface waters to no more than 20 percent of Ground Water Capacity, based on the Low Flow Margin Method.

Objective 2B10b | Prevent net increases in consumptive and depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit, emphasizing techniques including, but not limited to, water reuse, recycling and conservation.

Objective 2B10c | Limit consumptive and depletive water uses in Existing Constrained Areas to the 2003 consumptive and depletive water use plus 5 percent of the Ground Water Capacity (up to the standard thresholds in Objective 2B10a) to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to, water reuse, recycling and conservation.

Objective 2B10d | Give highest priority allocation of remaining Net Available Water to areas that can accommodate designated Receiving Zones.

Objective 2B10e | Establish and implement best management practices for recreational, landscape irrigation and other practices through applicable State and federal programs.

Objective 2B10f | Allow water resource transfers between subwatersheds only when there is no other viable alternative and where such transfers would demonstrably not result in impairment of resources in any subwatershed. Potential effects on upstream and downstream subwatersheds should be included in any such evaluation.

Objective 2B10g | Establish and implement mandatory stormwater reuse for recreational and other non-agricultural irrigation, as well as other non-potable water purposes to minimize both the volume of stormwater discharges and water withdrawals for these purposes.

Objective 2B10h | Ensure, through NJDEP Water Allocation regulations, that any new or increased water allocation permits do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.

Subpart b. Protection of Water Resources Quantity

The Highlands Regional Master Plan focuses on a variety of measures to protect the replenishment of water resources in the Highlands Region through ground water recharge and other means, to ensure the maintenance of aquatic ecosystems and human water uses.

GOAL 2C | REFINEMENT OF WATER AVAILABILITY METHODS AND ESTIMATES.

Policy 2C1 | To improve estimates of Net Water Availability over time, including testing, development and adoption of ecologically-based assessment techniques to evaluate the high and low flow needs of streams necessary to maintain the health of aquatic ecosystems, and the relationship between ground water recharge, ecological flow needs, consumptive water uses and estimates of water availability for both ground and surface water resources.

Policy 2C2 | To evaluate potable water supply reservoir safe yield and passing flow requirements and examine the effects of upstream consumptive and depletive water uses on safe yields.
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<table>
<thead>
<tr>
<th>Policy 2C3</th>
<th>To develop a more refined Hydrologic Unit Map using Light Detection and Ranging (LiDAR) technology and high resolution digital elevation modeling to support more detailed geographic estimates of water availability.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 2C4</td>
<td>To develop more refined estimates of the effects on Net Water Availability regarding the exportation and importation of water and wastewater.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOAL 2D</th>
<th>MAINTENANCE OF HYDROLOGIC INTEGRITY THROUGH THE PROTECTION OF GROUND WATER RECHARGE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 2D1</td>
<td>To map and maintain an inventory of ground water recharge potential for the Highlands Region.</td>
</tr>
<tr>
<td>Policy 2D2</td>
<td>To delineate Prime Ground Water Recharge Areas as those lands within a HUC14 subwatershed that have the highest recharge volumes as of the most recent land use/land cover data available, relative to other land areas, and in the aggregate provide 40 percent of total ground water recharge during drought conditions.</td>
</tr>
<tr>
<td>Policy 2D3</td>
<td>To protect the quantity and quality of Prime Ground Water Recharge Areas.</td>
</tr>
<tr>
<td>Objective 2D3a</td>
<td>Implement, through local development review and Highlands Project Review, low impact development or other best management practices to minimize the need for engineered recharge methods for the purpose of complying with N.J.A.C. 7:8 (Stormwater Management Rules).</td>
</tr>
<tr>
<td>Objective 2D3b</td>
<td>Restrict through local development review and Highlands Project Review development activities and other activities which result in a reduction in ground water recharge volumes or will contribute to or result in water quality degradation within Prime Ground Water Recharge Areas.</td>
</tr>
<tr>
<td>Policy 2D4</td>
<td>To prohibit uses of land within a Prime Ground Water Recharge Area that may reduce recharge volumes or other uses that may impair water quality within or draining to a Prime Ground Water Recharge Area.</td>
</tr>
<tr>
<td>Objective 2D4a</td>
<td>Implement a requirement through local development review and Highlands Project Review that any development activity in a Prime Ground Water Recharge Area demonstrate that an equivalent of 125% of pre-existing recharge volumes of the site will be provided for within the same subwatershed, or by other means as determined by the Highlands Council.</td>
</tr>
<tr>
<td>Policy 2D5</td>
<td>To apply standards within the Protection Zone through local development review and Highlands Project Review to protect, restore and enhance the functionality and the water resource value of Prime Ground Water Recharge Areas.</td>
</tr>
<tr>
<td>Objective 2D5a</td>
<td>Prohibit the creation of impervious surfaces and other surfaces that significantly impede recharge within a Prime Ground Water Recharge Area, and restrict other land uses that may degrade water quality within or draining to a Prime Ground Water Recharge Area.</td>
</tr>
<tr>
<td>Objective 2D5b</td>
<td>Allow for modifications to Prime Ground Water Recharge Area protection requirements, such as increases in impervious cover or loss of forest or other natural land cover, only upon demonstration that any relief from protection requirements will not impair or reduce ground water recharge quality or volumes and are necessary to protect public health and safety, or to provide for minimum practical use in the absence of better alternatives.</td>
</tr>
<tr>
<td>Policy</td>
<td>Description</td>
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</tr>
<tr>
<td><strong>Policy 2D6</strong></td>
<td>To apply standards within the Conservation Zone through local development review and Highlands Project Review to protect, restore and enhance the functionality and the water resource value of Prime Ground Water Recharge Areas.</td>
</tr>
<tr>
<td><strong>Objective 2D6a</strong></td>
<td>Discourage and restrict the creation of impervious surfaces and other surfaces that significantly impede recharge within a Prime Ground Water Recharge Area, or other uses that may degrade water quality within or draining to a Prime Ground Water Recharge Area.</td>
</tr>
<tr>
<td><strong>Objective 2D6b</strong></td>
<td>Allow for modifications to Prime Ground Water Recharge Area protection requirements, such as increases in impervious cover or loss of forest or other natural land cover only upon demonstration that any relief from protection requirements will not impair or reduce ground water recharge quality or volumes, and are necessary to protect public health and safety, or to provide for minimum practical use in the absence of any alternative.</td>
</tr>
<tr>
<td><strong>Policy 2D7</strong></td>
<td>To apply standards within the Existing Community Zone through local development review and Highlands Project Review to provide for the protection of ground water recharge areas.</td>
</tr>
<tr>
<td><strong>Objective 2D7a</strong></td>
<td>Achieve a net improvement in ground water recharge volume and maintenance of water quality through compliance with any related provisions of an adopted regional stormwater plan.</td>
</tr>
<tr>
<td><strong>Objective 2D7b</strong></td>
<td>Achieve a net improvement in ground water volume and maintenance of water quality through redevelopment, enhanced infiltration, pretreatment or other means where feasible.</td>
</tr>
<tr>
<td><strong>Policy 2D8</strong></td>
<td>To implement resource protection standards to provide for the protection of ground water recharge areas on a site-specific basis during local development review and Highlands Project Review.</td>
</tr>
<tr>
<td><strong>Objective 2D8a</strong></td>
<td>Establishment of minimum site design guidelines and permissible uses within a Prime Ground Water Recharge Area.</td>
</tr>
<tr>
<td><strong>Objective 2D8b</strong></td>
<td>Increases in pre-existing impervious area shall not be permitted if they will contravene an applicable management, low impact design standard, or other best management practice.</td>
</tr>
<tr>
<td><strong>Objective 2D8c</strong></td>
<td>Identify and implement opportunities for the restoration or enhancement of impaired Prime Ground Water Recharge Areas through the retrofit or rehabilitation of stormwater recharge facilities, land management improvements, reforestation, etc.</td>
</tr>
<tr>
<td><strong>Objective 2D8d</strong></td>
<td>Implement programs for Prime Ground Water Recharge Areas which encourage redevelopment of previously developed areas and allow for other compatible uses that improve recharge area productivity or water quality.</td>
</tr>
<tr>
<td><strong>Objective 2D8e</strong></td>
<td>Require conformance with applicable components of regional stormwater management plans, where applicable, as a mandatory requirement for any site plan application.</td>
</tr>
<tr>
<td><strong>Policy 2D9</strong></td>
<td>To develop technical guidelines and procedures for low impact development, engineering and other appropriate best management practices to protect, restore and enhance Prime Ground Water Recharge Areas.</td>
</tr>
<tr>
<td><strong>Policy 2D10</strong></td>
<td>To identify land use categories or other activities that pose sufficient risk of contamination and that should not be allowed within Prime Ground Water Recharge Areas.</td>
</tr>
</tbody>
</table>
**Policy 2D11**
To develop model municipal development regulations and master plan elements for the protection of Prime Ground Water Recharge Areas, through mechanisms that both complement and supplement the provisions of N.J.A.C. 7:8 (Stormwater Management Rules).

**GOAL 2E**
**IMPROVEMENT OF GROUND WATER RECHARGE THROUGH REGIONAL MANAGEMENT EFFORTS.**

**Policy 2E1**
To develop regional stormwater plans to promote regional protection, restoration and enhancement of ground water recharge volume and quality where specific watersheds are at risk in the absence of regional analysis and enhanced standards (see N.J.A.C. 7:8, Stormwater Management Rules).

**Policy 2E2**
To coordinate programs, funding and activities among public and private entities to encourage regional ground water recharge protection, restoration and enhancement activities consistent with the Plan.

**Subpart c. Water Quality**

The Highlands Regional Master Plan focuses on a variety of measures to protect, enhance and restore as necessary the quality of water resources in the Highlands Region to ensure that human and ecological water uses have water quality appropriate to those uses, and that human water uses do not alter water quality in unacceptable ways.

**GOAL 2F**
**ASSESSMENT AND RESTORATION OF SURFACE AND GROUND WATER QUALITY OF THE HIGHLANDS REGION.**

**Policy 2F1**
To identify surface and ground water resources currently impaired or at risk of impairment, and in need of protection, restoration or enhancement.

**Policy 2F2**
To coordinate with NJDEP regarding a unified water quality assessment and the development and implementation of Total Maximum Daily Loads, where necessary, for all surface waters within the Highlands Region.

**Policy 2F3**
To coordinate with NJDEP regarding a unified ground water quality assessment, monitoring and attainment program.

**Policy 2F4**
To coordinate with NJDEP regarding efforts to monitor areas of known contamination to ground water resources within the Highlands Region and activities to remediate and restore water quality.

**Policy 2F5**
To coordinate with NJDEP and other agencies to identify impairments and implement improved regulatory actions and management practices that will also support the water quality goals of the Highlands Act.

**Policy 2F6**
To remediate the pollutant sources associated with existing or historic land uses in conjunction with redevelopment.

**GOAL 2G**
**PROTECTION, RESTORATION AND ENHANCEMENT OF THE WATER QUALITY OF THE HIGHLANDS REGION.**

**Policy 2G1**
To evaluate locations and density of development which are sustainable in conjunction with the use of best management practices applicable to these various water resource
| Policy 2G2 | needs and support the protection and management of critical lands for water quality purposes. To reduce or avoid water quality impacts using requirements for water quality protection measures for new land uses through local development review and Highlands Project Review. |
| Policy 2G3 | To adopt and implement water quality protections through Plan Conformance, local development review and Highlands Project Review. |
| Objective 2G3a | Prohibit land uses that would increase pollutant loadings to waters for which TMDLs have been adopted by NJDEP unless in compliance with the relevant TMDL. |
| Objective 2G3b | Ensure that new land uses draining to a stream designated as impaired but lacking a TMDL (i.e., Sublist 5) avoid increased pollutant loadings for the parameter or parameters for which a TMDL is required. |
| Objective 2G3c | Wastewater Management Plans or amendments shall demonstrate that the proposed service area will not directly or indirectly support development that would be in violation of an adopted TMDL. |
| Policy 2G4 | To determine where water quality improvements are necessary or beneficial for the improvement of water availability, develop watershed-based plans to achieve such improvements such as restoration techniques including disconnection and reduction of existing impervious surfaces, develop implementation mechanisms, and implement these plans. |
| Policy 2G5 | To adopt and implement storm water management controls through Plan Conformance, local development review and Highlands Project Review. |
| Objective 2G5a | Require recharge of clean stormwater rather than contaminated stormwater wherever feasible to meet stormwater management requirements, and to pretreat contaminated stormwater wherever its recharge is required. |
| Objective 2G5b | Require low impact development and other best management practices standards for stormwater management to minimize the discharge of stormwater-entrained pollutants to ground and surface waters. |
| Objective 2G5c | Implement agricultural best management practices for water conservation, water reuse, nutrient and pesticide application, animal waste management, environmental restoration, pollution assessment and prevention, and irrigation efficiency in farm operations for the protection of ground and surface water quality. |
| Policy 2G6 | To establish minimum criteria for municipal water quality management programs. |
| Objective 2G6a | Develop technical guidelines and procedures for low impact development and best management practices to protect ground and surface water quality. |
| Objective 2G6b | Develop model municipal development regulations for the protection of ground and surface water quality. |
| Objective 2G6c | Require conforming municipal and county master plans and development regulations to incorporate relevant TMDLs, additional water quality protection measures and wellhead protection for public water supply wells and nitrate standards as development standards. |
| Policy 2G7 | To promote the implementation of low impact development standards and best management practices to protect the quality of ground and surface water quality. |
| Policy 2G8 | To develop an educational program to further the understanding of the importance of |
water quality and methods of protecting water resources in the Highlands.

<table>
<thead>
<tr>
<th>GOAL 2H</th>
<th>LIMITATION OF THE TYPE AND AMOUNT OF HUMAN DEVELOPMENT IN THE WELLHEAD PROTECTION AREAS OF PUBLIC WATER SUPPLY WELLS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 2H1</td>
<td>To identify Wellhead Protection Areas for public community and public noncommunity nontransient water supply wells in or affecting the Highlands Region.</td>
</tr>
<tr>
<td>Objective 2H1a</td>
<td>Coordinate with NJDEP to establish and maintain an inventory of Wellhead Protection Areas in or affecting the Highlands Region.</td>
</tr>
<tr>
<td>Objective 2H1b</td>
<td>Identify land uses within the Wellhead Protection Areas that have a significant potential for contributing pollutants of concern to ground water.</td>
</tr>
<tr>
<td>Objective 2H1c</td>
<td>Each Wellhead Protection Area shall include three tiers. The time of travel for ground water to the well in Tier 1 shall be up to 2 years; Tier 2 shall be up to 5 years; and Tier 3 shall be up to 12 years. Each tier shall include the area of each smaller tier within it.</td>
</tr>
<tr>
<td>Policy 2H2</td>
<td>To develop and implement, through Plan Conformance, local development review and Highlands Project Review, resource protection measures to protect and enhance ground water and water supply resources within Wellhead Protection Areas consistent with the source water assessments for each water supply source.</td>
</tr>
<tr>
<td>Objective 2H2a</td>
<td>Prohibit land uses that have a significant potential to result in the discharge of pathogens (including but not limited to septic systems and engineered stormwater infiltration from surfaces with significant potential for contact with pathogenic contaminants) to ground water or to the land surface within a designated Tier 1 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality.</td>
</tr>
<tr>
<td>Objective 2H2b</td>
<td>Prohibit land uses that have a significant potential to result in the discharge of persistent organic chemicals sources (including but not limited to existing discharges of industrial or other non-sanitary wastewater effluent) to ground water or to the land surface within a designated Tier 2 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality.</td>
</tr>
<tr>
<td>Objective 2H2c</td>
<td>Require that land uses that have a significant potential to result in major discharges of pollutants to ground water or to the land surface (including but not limited to non-sanitary wastewater effluent and any major sources of potential discharges such as spills and leaks), such that they may degrade ground water quality within a designated Tier 3 Wellhead Protection Area, shall incorporate ongoing management of toxic chemical sources and prohibition of unregulated discharges, so that the potential for ground water contamination is minimized and the opportunity for discharge discovery and control is maximized.</td>
</tr>
<tr>
<td>Policy 2H3</td>
<td>To develop educational materials to further the understanding of the importance of Wellhead Protection Areas to protect ground water supply.</td>
</tr>
<tr>
<td>Policy 2H4</td>
<td>To prepare design standards in order to encourage appropriate conservation-based design.</td>
</tr>
<tr>
<td>Objective 2H4a</td>
<td>Require site specific and municipal stormwater management plans to address wellhead protection requirements.</td>
</tr>
<tr>
<td>Objective 2H4b</td>
<td>Encourage stormwater reuse for non-agricultural irrigation and other non-potable water purposes to minimize the volume of stormwater discharges (other than from clean sources) within a Tier 1 or Tier 2 Wellhead Protection Area.</td>
</tr>
</tbody>
</table>
Objective 2H4c | Develop technical guidelines and procedures for the identification of potable sources at risk and protection of Wellhead Protection Areas for public water supply wells in the Highlands Region.

Objective 2H4d | Develop technical guidelines and procedures for wellhead protection best management practices to protect ground water quality.

Policy 2H5 | To require that conforming municipalities revise master plans and development regulations to address wellhead protection requirements.

Objective 2H5a | Develop model master plan elements and land development regulations for Wellhead Protection Areas.

Objective 2H5b | Restrict development activities that pose threats to the water quality of public water supply wells.

Objective 2H5c | Ensure that development activities and existing land use activities implement best management practices to protect the quality of ground water within Wellhead Protection Areas.

Objective 2H5d | Amend Wastewater Management Plans for conforming municipalities and counties to ensure that any activity associated with the proposed service area will not adversely affect a Wellhead Protection Area.

**Subpart d. Sustainable Development and Water Resources**

The Highlands Regional Master Plan includes a variety of measures to ensure that future development is at densities necessary to remain within the carrying capacity of water resources for both quality and quantity, and to ensure that water supply and wastewater utility capacities are made available in ways that provide maximum regional benefit within the constraints of water availability and water quality protection, and are used in ways that provide cost-effective and efficient service.

<table>
<thead>
<tr>
<th>GOAL 2I</th>
<th>LIMITATION OF THE EXPANSION OF WATER AND WASTEWATER INFRASTRUCTURE IN THE PRESERVATION AREA.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 2I1</td>
<td>To ensure compliance with the statutory revocation of designated sewer service areas unless the wastewater collection systems had been installed by August 10, 2004, and unless extensions are warranted to address documented threats to public health and safety or are exempt from the Highlands Act.</td>
</tr>
<tr>
<td>Policy 2I2</td>
<td>To identify water and wastewater infrastructure necessary for appropriate and environmentally-sensitive redevelopment of Highlands Redevelopment Areas in the Preservation Area.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOAL 2J</th>
<th>ALL EXISTING AND FUTURE DEVELOPMENT IN THE HIGHLANDS REGION THAT USE PUBLIC WATER SUPPLY SYSTEMS ARE SERVED BY ADEQUATE AND APPROPRIATE INFRASTRUCTURE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 2J1</td>
<td>To establish and maintain an inventory of Highlands Public Community Water System infrastructure, including developed parcels with current connections to existing utility service areas.</td>
</tr>
<tr>
<td>Objective 2J1a</td>
<td>The development and maintenance of an inventory of Existing Areas Served.</td>
</tr>
<tr>
<td>Objective 2J1b</td>
<td>The development and maintenance of an inventory of the service areas and capacity of</td>
</tr>
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<td>----------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Objective 2J1d</td>
<td>The identification of remaining available water supply system capacity to support regional growth opportunities within the Highlands Region.</td>
</tr>
</tbody>
</table>

**Policy 2J2**
To ensure, through Plan Conformance and Highlands Project Review, that the service areas, water allocation permits and bulk water purchases of Highlands Public Community Water Systems shall be limited such that the maximum monthly demand shall not exceed or contribute to an exceedance of the water availability of its source waters.

**Policy 2J3**
To identify potential opportunities for public water systems where domestic water supplies have been documented as a threat to public health due to source contamination.

**Policy 2J4**
To minimize, through Plan Conformance, local development review and Highlands Project Review, the extension of public water supply systems within the Protection Zone and the Conservation Zone for the protection of water resources.

**Objective 2J4a**
Prohibit new, expanded or extended public water systems unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a designated Highlands Redevelopment Area, or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.

**Objective 2J4b**
Accommodate compact development served by existing or proposed public water systems only where such development is within or immediately adjacent to an existing service area and provides for the clustering or aggregation of development that will preserve at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes and the development impacts are otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.

**Objective 2J4c**
All development in areas which are not served by public water systems shall be at a density which can be supported by on-site domestic wells.

**Policy 2J5**
To allocate available water supply in the Existing Community Zone to provide for the maximum direct and indirect protection of water resources in the Highlands Region.

**Objective 2J5a**
The highest priority for the allocation of available utility capacity in Existing Community Zones shall be given to areas of regional growth opportunities that constitute designated Receiving Zones.

**Objective 2J5b**
Develop a comprehensive data base of water utilities that are dependent on Current Water Availability Deficit Areas or Existing Water Availability Constrained Areas as a source of water, with estimates of the extent to which service area demands and water allocation permits may exceed available water.

**Objective 2J5c**
Limit future water system demand and/or reducing existing demand by water systems that are dependent on Current Water Availability Deficit Areas or Existing Water Availability Constrained Areas as a source of water.
<table>
<thead>
<tr>
<th><strong>Objective 2J5d</strong></th>
<th>Availability Constrained Areas as a source of water. Limit future water system demands to levels that will not cause a Current Water Availability Deficit where one does not currently exist.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy 2J6</strong></td>
<td>To prohibit, through local development review and Highlands Project Review, new or increased water resource transfers between subwatersheds unless it is demonstrated that no other option exists to meet public health, safety and welfare objectives and where such transfers do not result in impairment of resources in the subwatershed from which water is proposed to be transferred.</td>
</tr>
<tr>
<td><strong>Policy 2J7</strong></td>
<td>To encourage water recycling/reuse measures, such as domestic and institutional gray water systems, where appropriate, to minimize water use in existing land uses.</td>
</tr>
<tr>
<td><strong>Policy 2J8</strong></td>
<td>To require water resource management for all development in the Highlands Region, through local development review and Highlands Project Review.</td>
</tr>
<tr>
<td><strong>Objective 2J8a</strong></td>
<td>Require the maximum feasible water conservation and recycling for any redevelopment or development activity, including renovations to existing single family residences and commercial/industrial buildings.</td>
</tr>
<tr>
<td><strong>Objective 2J8b</strong></td>
<td>Require consideration of and the cost-effective use of recycled or re-used water rather than potable public water for non-potable purposes such as fountains, nonessential uses such as golf courses, certain recreational, commercial, or agricultural uses.</td>
</tr>
<tr>
<td><strong>Objective 2J8c</strong></td>
<td>Require that new residential development served by public community water systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space), to ensure cost-effective utility service.</td>
</tr>
<tr>
<td><strong>Objective 2J8c</strong></td>
<td>Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.</td>
</tr>
<tr>
<td><strong>Policy 2J9</strong></td>
<td>To ensure continued refinement and development of the Regional Master Plan.</td>
</tr>
<tr>
<td><strong>Objective 2J9a</strong></td>
<td>Implement a coordinated program with NJDEP to track ground water and surface water withdrawals and water allocations within the Highlands Region to maintain current estimates of net utility capacity and to fill critical missing data gaps.</td>
</tr>
<tr>
<td><strong>Objective 2J9b</strong></td>
<td>Coordinate with NJDEP, water purveyors and water utilities to ensure that service areas and franchise areas are supplied by and consistent with sustainable yields from their designated sources.</td>
</tr>
<tr>
<td><strong>Objective 2J9c</strong></td>
<td>Determine where water quality improvements are necessary or beneficial for the improvement of Net Water Availability or protection of existing drinking water supplies, develop watershed-based plans to achieve such improvements, and develop mechanisms to implement these plans.</td>
</tr>
<tr>
<td><strong>GOAL 2K</strong></td>
<td>ALL EXISTING AND FUTURE DEVELOPMENT IN THE HIGHLANDS REGION THAT USE PUBLIC WASTEWATER TREATMENT SYSTEMS ARE SERVED BY ADEQUATE AND APPROPRIATE INFRASTRUCTURE.</td>
</tr>
<tr>
<td><strong>Policy 2K1</strong></td>
<td>To establish and maintain an inventory of Highlands public wastewater management infrastructure, including developed parcels with current connections to existing utility service areas.</td>
</tr>
<tr>
<td><strong>Objective 2K1a</strong></td>
<td>The development and maintenance of an inventory of Existing Areas Served.</td>
</tr>
<tr>
<td><strong>Objective 2K1b</strong></td>
<td>The development and maintenance of an inventory of the service areas and capacity of Highlands Domestic Sewerage Facilities.</td>
</tr>
<tr>
<td><strong>Objective 2K1c</strong></td>
<td>The development of an estimated Available Wastewater Treatment Capacity for each Highlands Domestic Sewer Facility.</td>
</tr>
<tr>
<td><strong>Objective 2K1d</strong></td>
<td>The identification of remaining available wastewater treatment capacity to support regional growth opportunities within the Highlands Region.</td>
</tr>
<tr>
<td><strong>Policy 2K2</strong></td>
<td>To base projected demand for appropriate economic revitalization and opportunities for designated Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.</td>
</tr>
<tr>
<td><strong>Policy 2K3</strong></td>
<td>To provide new growth and development in the Protection Zone and the Conservation Zone with adequate and appropriate wastewater treatment through Plan Conformance, local development review and Highlands Project Review.</td>
</tr>
<tr>
<td><strong>Objective 2K3a</strong></td>
<td>Allocate any available sewer system capacity to address documented threats to public health from failing septic systems on a priority basis.</td>
</tr>
<tr>
<td><strong>Objective 2K3b</strong></td>
<td>Prohibit new, expanded, or extended wastewater collection or treatment outside of Existing Areas Served unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area, or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.</td>
</tr>
<tr>
<td><strong>Objective 2K3c</strong></td>
<td>Expansion of wastewater service shall be permitted in areas where there is a demonstrated threat to public health caused by a pattern of documented failing septic systems located within Existing Areas Served, or adjacent to Existing Areas Served where the failing septic systems cannot reasonably be addressed through rehabilitation or replacement of the existing septic system.</td>
</tr>
<tr>
<td><strong>Objective 2K3d</strong></td>
<td>Permit cluster development served by existing or expanded wastewater collection and treatment systems in an Agricultural Resource Area only where such development is within or immediately adjacent to an Existing Areas Served and adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes and provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.</td>
</tr>
<tr>
<td><strong>Objective 2K3e</strong></td>
<td>Ensure that new growth and development that is not served by public wastewater collection and treatment systems is limited to densities suitable for on-site wastewater treatment.</td>
</tr>
</tbody>
</table>
| **Objective 2K3f** | Cluster development utilizing community-based on-site treatment facilities shall be permitted: (1) where such development is not within an Existing Area Served or adjacent to an Existing Area Served with available capacity, (2) where the system is designed and has capacity only for the cluster development, (3) where the system does
not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served, (4) where adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes, (5) where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service, and (6) provided that the proposed development is otherwise consistent with the goals and requirements of the Plan.

**Policy 2K4**
To provide new growth and development in the Existing Community Zone with adequate and appropriate wastewater treatment, through Plan Conformance, local development review and Highlands Project Review.

**Objective 2K4a**
The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served.

**Objective 2K4b**
The second highest priority for the allocation of excess or additional wastewater treatment capacity is to regional growth and redevelopment areas that can serve as designated Receiving Zones.

**Objective 2K4c**
Allow the expansion or creation of wastewater collection systems beyond Existing Areas Served to serve lands which are appropriate for infill or redevelopment, or to serve areas if they are shown to be necessary for and are approved by the Highlands Council to address a documented threat to public health and safety where no alternative is feasible, to serve cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.

**Policy 2K5**
To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review and Highlands Project Review.

**Objective 2K5a**
Allow community-based on-site treatment facilities for those areas located outside Existing Areas Served that are shown to be necessary for and are approved by the Highlands Council to address a documented threat to public health and safety due to failing septic systems; these facilities shall only serve existing wastewater and shall not include infrastructure to support future growth.

**Objective 2K5b**
Prohibit the construction of sewer lines within Tier 1 of Well Head Protection Areas that may result in seepage of untreated sewage into ground water supplies.

**Objective 2K5c**
Prohibit expansion of a public wastewater collection and treatment systems and community on-site treatment facilities within the Preservation Area except as provided by the Highlands Act and within Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, Steep Slopes, and Critical Habitat Areas unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, cluster development (see Objectives 2K3d and 2K3f), Highlands Redevelopment Areas, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of these sensitive environmental resources.

**Objective 2K5d**
Require the use of recycled or re-used water wherever possible including aesthetic
| Objective 2K5e | Existing wastewater collection and treatments systems which are non-compliant with state water quality standards for wastewater treatment and effluent discharge shall be prohibited from collecting and treating additional wastewater until the treatment systems are fully compliant with State permit requirements. |
| Objective 2K5f | Wastewater Management Plan or amendments thereto, or to an Areawide Water Quality Management Plan, shall be consistent with requirements of this Plan. |
| **Policy 2K6** | To ensure the efficiency and cost-effectiveness of public wastewater collection and treatment systems, through Plan Conformance, local development review and Highlands Project Review. |
| Objective 2K6a | Require that new residential development served by public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, and recreational space) to ensure cost-effective utility service. |
| Objective 2K6b | Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development. |
| **GOAL 2L** | ENSURE THAT ON-SITE WASTEWATER SYSTEM DISCHARGES DO NOT EXCEED THE NATURAL CAPACITY OF GROUND WATER TO ATTENUATE LOADINGS, EXACERBATE EXISTING NITRATE IMPAIRMENT, OR CONTRIBUTE TO POTENTIAL NITRATE IMPAIRMENT FOR SUBWATERSHEDS OF THE HIGHLANDS REGION. |
| Policy 2L1 | To use nitrate concentrations in ground water as an indicator of water quality, and to use nitrate dilution modeling as the primary method for assessing the carrying capacity of lands for development that relies on septic systems for wastewater treatment. |
| Objective 2L1a | Determine background median concentrations of nitrate in ground water by HUC14 subwatershed. |
| Objective 2L1b | Identify the factors affecting the suitability of densities for development that relies on septic systems for wastewater treatment. |
| Objective 2L1c | Develop appropriate protection measures to minimize contamination of ground water from septic systems. |
| Objective 2L1d | Develop drought ground water recharge estimates by HUC14 subwatershed for use in the NJDEP nitrate dilution model. |
| Policy 2L2 | To use the median background nitrate concentrations in ground water in the Highlands Region as a basis for establishing on-site wastewater treatment densities through Plan Conformance, local development review and Highlands Project Review. |
| Objective 2L2a | Use the median concentrations of nitrate in ground water for Planning Area HUC14 subwatersheds where the Protection Zone is predominant as the nitrate target for new development reliant on septic systems within the Protection Zone. The median is 0.72 mg/L. |
| Objective 2L2b | Use the median concentrations of nitrate in ground water for Planning Area HUC14 |
| **Objective 2L2c** | Subwatersheds where the Conservation Zone is predominant as the nitrate target for new development reliant on septic systems within the Conservation Zone. The median is 1.87 mg/L. Use the NJDEP Highlands Preservation Area rules and nitrate thresholds for the Preservation Area. |
| **Objective 2L2d** | Use a nitrate target of 2 mg/L for the Existing Community Zone within Planning Area, on a project-by-project basis, where new development will rely on septic systems. |
| **Objective 2L2e** | New residential development using septic systems where lot-size averaging, clustering or open space subdivision design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the LUCM Zone, but with the density for the developed portion of the site based on a nitrate dilution target not to exceed 10 mg/L or any more stringent requirement as required by N.J.A.C. 7:15. |
| **Objective 2L2f** | Carrying capacity shall be documented through the Land Use Capability Septic System Yield Map as the number of allowable septic systems per Conservation and Protection Zone for each HUC14 subwatershed, taking into account the nitrate target, the HUC14 subwatershed drought ground water recharge, and the acreage that is privately owned, undeveloped or underdeveloped, and not preserved. |
| **Objective 2L2g** | Municipalities may choose to include preserved lands in the analysis of septic system yields for the Conservation and Protection Zone as an alternative to the approach in Objective 2L2f if allowed by NJDEP pursuant to the Water Quality Management Planning Rules at N.J.A.C. 7:15 and where: (1) the municipality demonstrates that including the septic system yields from the preserved lands results in a development density and pattern that is not greater than that allowed by existing zoning and is compatible with the pattern of development associated with the affected Zone; and (2) the municipality implements or causes to be implemented (by development applicants benefiting from the increased septic system yields either directly or through contribution to an implementation fund) agricultural management practices that will reduce nitrate loadings to the same HUC14 subwatershed by: |
| | • at least the same amount as the estimated septic system loadings from the additional density where the HUC14 subwatershed median nitrate concentration is lower than the relevant Conservation or Protection Zone median concentration, or |
| | • at least equal to double the estimated septic system loadings from the additional density where the HUC14 subwatershed median nitrate concentration is higher than the relevant Conservation or Protection Zone median concentration. |
| **Objective 2L2h** | New residential development utilizing septic systems shall be designed in a manner that minimizes the risk of well contamination due to the flow of septic system plumes within or between developed lots, addressing general ground water flow patterns, major fracture systems and other appropriate geological, geophysical and hydrogeological issues. |
| **Policy 2L3** | To prepare and maintain an inventory of areas where existing ground water or surface water quality is impaired to such a degree that any increase in nitrate concentration would have an adverse impact on water quality. |
| **Policy 2L4** | To establish methods for restoration of ground water quality for subwatersheds where existing ground water is impaired on a subwatershed by subwatershed basis. |
| **Policy 2L5** | To establish minimum standards for the placement, design, monitoring and maintenance of septic systems necessary to protect, restore, and enhance ground water |
Part 3. Agricultural Resources

Agriculture is an important part of the essential character of the Highlands Region’s culture, landscape and economy. It provides important economic benefits to the Highlands Region in the form of agricultural production and agro tourism, provides food to area residents using less energy than would be required to import produce from other regions and helps maintain the Highland’s rural character.

### GOAL 3A

**PROTECTION AND ENHANCEMENT OF THE AGRICULTURAL RESOURCES OF THE HIGHLANDS REGION.**

**Policy 3A1**
To create, maintain, and inventory agricultural lands which are used for agricultural purposes or which are undeveloped and contain soils which are highly suitable for agricultural use.

**Policy 3A2**
To maintain an inventory of farmland assessed lands in the Highlands Region.

**Policy 3A3**
To consider Prime, Statewide Importance, Unique, and Locally Important soils as Important Farmland Soils which are critical agricultural resources of the Highlands Region.

**Policy 3A4**
To delineate Agricultural Resource Areas in the Highlands Region as those areas of concentrated agriculture, using Important Farmland Soils as a critical factor.

**Policy 3A5**
To promote farmland preservation within the Agricultural Resource Areas and accord priority to the preservation of agricultural lands within Agricultural Priority Areas, through fee simple acquisition, easement acquisition, Transfer of Development Rights and other agricultural land conservation techniques.

**Policy 3A6**
To ensure through Plan Conformance, local development review and Highlands Project Review that land uses within an Agricultural Resource Area minimize conflict with or support sustainable agriculture, or are compatible with cluster development that preserves agricultural lands, and support the resource protection requirements of the RMP.

**Objective 3A6a**
Implementation of regulations which limit non-agricultural uses within an Agricultural Resource Area to those uses that support the preservation of farmland, the continued viability of the agricultural industry, or are compatible with cluster development that preserves agricultural lands, and support the resource protection requirements of the...
<table>
<thead>
<tr>
<th>Policy 3A7</th>
<th>To permit through local development review and Highlands Project Review limited development, including family and farm worker housing in Agricultural Resource Areas which are accessory to and/or supportive of sustainable agriculture, subject to compliance with the resource management programs of the RMP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 3A7a</td>
<td>Implementation of regulations which allow for construction of ancillary structures and housing for family and farm workers that are necessary to support farm operations, upon a demonstration that the proposed development is consistent with the resource protection goals of the RMP.</td>
</tr>
<tr>
<td>Policy 3A8</td>
<td>To encourage the use of agro-forestry best management practices and techniques on cultivated farmland located within both the Agricultural Resource Area and the Forest Resource Area.</td>
</tr>
<tr>
<td>Policy 3A9</td>
<td>To implement programs which encourage owners and operators of farmland with woodlots within Agricultural Resource Areas to prepare and implement approved Forest Management Plans that conform to the resource protection standards of this Plan.</td>
</tr>
<tr>
<td>Objective 3A9a</td>
<td>Coordinate with the State Forester to provide guidance for the development of Forest Management Plans that improve maintenance of ecosystem and water resource values of the Highlands Region.</td>
</tr>
<tr>
<td>Policy 3A10</td>
<td>To establish and implement resource management programs which protect agricultural resources during local development review and Highlands Project Review and approval.</td>
</tr>
<tr>
<td>Objective 3A10a</td>
<td>Implement regulations which ensure non-agricultural land development within an Agricultural Resource Area protects and enhances agricultural production, protects important farmland soils, and meets other natural resource management and protection requirements.</td>
</tr>
<tr>
<td>Objective 3A10b</td>
<td>Implement regulations which provide that all non-agricultural development which is proposed in an Agricultural Resource Area comply with open space design requirements to avoid conflicts between such development and agricultural activities and protect farmland and sensitive environmental resources.</td>
</tr>
<tr>
<td>Objective 3A10c</td>
<td>Implement regulations which require mandatory clustering for residential development in an Agricultural Resource Area with adequate provision for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.</td>
</tr>
<tr>
<td>Objective 3A10d</td>
<td>Implementation of regulations which require that all land preserved as farmland or natural resource area as a result of clustering be subject to a conservation easement enforceable by the appropriate municipality and the Highlands Council.</td>
</tr>
<tr>
<td>Policy 3A11</td>
<td>To require agricultural activities in the Preservation Area which involve additional agricultural impervious surfaces of greater than 3% but less than 9%, to prepare and obtain approval for a Farm Conservation Plan from the USDA Natural Resource Conservation Service, and to encourage such plans for similar agricultural development in the Planning Area.</td>
</tr>
<tr>
<td>Policy 3A12</td>
<td>To require agricultural activities in the Preservation Area which involve additional agricultural impervious surfaces of 9% or greater to prepare and obtain approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service, and to encourage such plans for similar agricultural development in the Planning Area.</td>
</tr>
<tr>
<td>Policy 3A13</td>
<td>To advocate for the amendment of the Farmland Assessment Act to permit the inclusion of credits for the control of invasive species, white-tailed deer reduction programs, and the water value of well-managed agricultural lands.</td>
</tr>
<tr>
<td>Policy 3A14</td>
<td>To work with the State Agriculture Development Committee and the Garden State Preservation Trust to establish incentives for any landowner in the Highlands Region seeking to preserve land under the farmland preservation program that would be provided in exchange for the landowner agreeing to permanently restrict the amount of impervious surface and agricultural impervious cover on the farm to a maximum of five percent of the total land area of the farm.</td>
</tr>
</tbody>
</table>

### GOAL 3B

**PROTECTION AND ENHANCEMENT OF AGRICULTURAL VIABILITY WITHIN THE HIGHLANDS REGION.**

| Policy 3B1 | To encourage private and public owners of lands within an Agricultural Resource Area to lease open lands to farmers and/or to manage open space lands in a manner which is compatible with adjoining agricultural uses. |
| Policy 3B2 | To promote research and study, and support proposals to enhance the long-term viability of the agriculture industry in the Highlands Region through innovative programs with regard to health care, banking practices, housing and labor. |
| Policy 3B3 | To seek additional funding from any and all state and federal funding programs for agriculture within the Highlands Region. |
| Policy 3B4 | To coordinate with other municipal, county, State and federal agencies to ensure to the maximum extent practicable that other agency programs are coordinated with the resource protection requirements of the Highlands RMP. |
| Policy 3B5 | To promote and enhance innovative agricultural practices including direct marketing, farmers markets, road side stands, agro-tourism and community supported agriculture. |

### GOAL 3C

**MINIMIZE CONSTRUCTION OF NON-AGRICULTURAL DEVELOPMENT-INDUCING WATER AND WASTEWATER INFRASTRUCTURE IN AGRICULTURAL RESOURCE AREAS.**

| Policy 3C1 | To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a Agricultural Resource Area within the Protection Zone and the Preservation Area, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or mandatory cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of agricultural lands within the Agricultural Resource Area. |
| Policy 3C2 | To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a Agricultural Resource Area in a Conservation Zone, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or mandatory cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of agricultural lands within the Agricultural Resource Area. |
necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or mandatory cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of agricultural lands within the Agricultural Resource Area.

<table>
<thead>
<tr>
<th>GOAL 3D</th>
<th>PROTECTION AND ENHANCEMENT OF SURFACE AND GROUND WATER QUALITY IN AGRICULTURAL RESOURCE AREAS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 3D1</td>
<td>To promote the use of appropriate alternative and innovative wastewater treatment systems to provide enhanced protection of surface and ground water quality in Agricultural Resource Areas of the Conservation Zone.</td>
</tr>
<tr>
<td>Policy 3D2</td>
<td>To promote efforts to increase Integrated Pest Management and Integrated Crop Management programs and other innovative management techniques that reduce pesticide and fertilizer use in conjunction with agricultural activities.</td>
</tr>
<tr>
<td>Policy 3D3</td>
<td>To identify subwatersheds with elevated nitrate levels, develop management plans for enhancing water quality, and implementing those plans in ways that enhance agricultural viability wherever feasible.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOAL 3E</th>
<th>CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE FARMLAND PRESERVATION PLAN ELEMENTS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 3E1</td>
<td>To prepare technical guidelines for the preparation of a Farmland Preservation Plan Element for inclusion in municipal and county master plans and development regulations.</td>
</tr>
<tr>
<td>Policy 3E2</td>
<td>To require conforming municipalities and counties to include a Farmland Preservation Plan Element consistent with the RMP in municipal and county master plans and development regulations.</td>
</tr>
<tr>
<td>Policy 3E3</td>
<td>To require conforming municipalities and counties to incorporate Right to Farm provisions in their master plans and development regulations.</td>
</tr>
</tbody>
</table>

Part 4. Historic, Cultural, Archaeological and Scenic Resources

The Highlands Region contains important historic, cultural, archaeological and scenic resources and the Highlands Act includes goals for their protection. These resources provide the public with an understanding of how the land and the people of the Highlands Region have changed over time. They also are important for fostering an appreciation for the events that contributed to the development of the towns, villages, and cities of the Highlands Region.

Historic resources include buildings, structures, districts, areas or sites which are significant to the history or culture of a place or time and connect communities with their pasts. Cultural resources include sites, artifacts or materials which relate to the people and how they live or lived. Cultural resources also reflect the way in which a community currently lives and the values which are important to it. Scenic resources are sites, landscapes and vistas that are remarkable or distinctive because of geology, topography, vegetation, history, culture or use of land. In the Highlands Region, topography forming ridgelines and mountainsides, panoramic views, streams and rivers, forests, agricultural landscapes and leafy suburbs are important scenic resources. The Highlands Council has assembled a Historic and Cultural Resource Inventory and a Scenic Resources Inventory.
<table>
<thead>
<tr>
<th>GOAL 4A</th>
<th>PROTECTION AND PRESERVATION OF THE HISTORIC, CULTURAL AND ARCHAEOLOGICAL RESOURCES OF THE HIGHLANDS REGION.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 4A1</td>
<td>To maintain and periodically update the Highlands Region Historic and Cultural Resources Inventory.</td>
</tr>
<tr>
<td>Objective 4A1a</td>
<td>Encourage municipalities and counties to include a historic, cultural and archaeological survey(s) as part of the Historic Preservation Plan element of their master plans.</td>
</tr>
<tr>
<td>Policy 4A2</td>
<td>To provide a process whereby resources may be nominated, considered and included in the Highlands Historic and Cultural Resources Inventory.</td>
</tr>
<tr>
<td>Policy 4A3</td>
<td>To ensure through local development review and Highlands Project Review that human development does not adversely affect the character or value of resources which are listed on the Highlands Historic and Cultural Resource Inventory to the maximum extent practicable.</td>
</tr>
<tr>
<td>Policy 4A4</td>
<td>To require that the impact of proposed human development on the historic and cultural resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval.</td>
</tr>
<tr>
<td>Objective 4A4a</td>
<td>All applications for site plan or subdivision approval shall include identification of any cultural, historic or archaeological resources in the Highlands Region which are listed on the Highlands Historic and Cultural Resource Inventory and may be affected by the proposed development.</td>
</tr>
<tr>
<td>Objective 4A4b</td>
<td>All development which affects identified cultural, historic or archaeological resources shall comply with minimum standards for the preservation of the affected resources.</td>
</tr>
<tr>
<td>Policy 4A5</td>
<td>To use the Secretary of the Interior's Standards for the Treatment of Historic Properties as the standard for municipal historic and cultural preservation review and include, at a minimum, the preservation and re-use of historic structures.</td>
</tr>
<tr>
<td>Policy 4A6</td>
<td>To coordinate the Highlands Council’s activities with regard to the historic and cultural resources with the New Jersey Historic Trust and the State Historic Preservation Office.</td>
</tr>
<tr>
<td>Policy 4A7</td>
<td>To promote historic and cultural heritage tourism in the Highlands Region.</td>
</tr>
<tr>
<td>Policy 4A8</td>
<td>To encourage municipalities and counties to establish historic preservation commissions or boards to review applications for development which affect historic, cultural and archaeological resources listed on the Highlands Historic and Cultural Resources Inventory.</td>
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<thead>
<tr>
<th>GOAL 4B</th>
<th>PROTECTION AND ENHANCEMENT OF THE SCENIC RESOURCES WITHIN THE HIGHLANDS REGION.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 4B1</td>
<td>To maintain and periodically update the Highlands Scenic Resources Inventory.</td>
</tr>
<tr>
<td>Policy 4B2</td>
<td>To provide a process whereby regionally significant resources may be nominated, considered and included in the Highlands Scenic Resources Inventory.</td>
</tr>
<tr>
<td>Policy 4B3</td>
<td>To ensure that human development does not adversely affect the character or value of resources which are listed on the Highlands Scenic Resources Inventory.</td>
</tr>
<tr>
<td>Policy 4B4</td>
<td>To establish minimum standards to ensure that Highlands Scenic Resources are not impaired by new human development.</td>
</tr>
</tbody>
</table>
Policy 4B5  To require that the impact of proposed human development on the scenic resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval.

Objective 4B5a  All development applications shall include identification of any scenic resources in the Highlands Region which are listed on the Highlands Scenic Resources Inventory and may be affected by the proposed development.

Objective 4B5b  All development which affects identified scenic resources shall comply with minimum standards for the preservation of the affected resources.

GOAL 4C  CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE MINIMUM STANDARDS FOR HISTORIC, CULTURAL, ARCHAEOLOGICAL AND SCENIC PROTECTION IN MUNICIPAL AND COUNTY MASTER PLANS AND LAND DEVELOPMENT REGULATIONS.

Policy 4C1  To require that conforming municipalities and counties include a Historic, Cultural and Scenic Resource Protection Element in municipal and county master plans and development regulations and update the Historic and Cultural Resources Inventory through local development reviews.

Policy 4C2  To require that conforming municipalities and counties include minimum standards for the protection and enhancement of historic, cultural and archaeological resources listed in the Highlands Historic and Cultural Resources Inventory in their development regulations.

Policy 4C3  To require that conforming municipalities and counties include minimum standards for the protection and enhancement of scenic resources listed in the Highlands Scenic Inventory in their development regulations.

Part 5. Transportation

The Highlands Regional transportation system is a complex network of roads, highways, railways and bridges which support various modes of travel, including private automobile, buses, truck, rail, bicycle and walking. There are four major commuter rail lines with 24 stations on these lines which are located within the Highlands Region as well as three regional airport facilities. The Region is served by four interstate highways, eight state roads and many county and local roads. In general, most of the highways and roads within the Highlands Region operate at or above design capacity. There is limited intra-regional bus service except for extensive commuter service which is provided by NJ Transit and by private operators, particularly in Morris County and along the Route 78 and 80 corridors.

GOAL 5A  PROVISION OF SAFE AND REASONABLE MOBILITY TO RESIDENTS AND VISITORS TO THE HIGHLANDS REGION, WITHIN THE HIGHLANDS, AND BETWEEN THE HIGHLANDS AND DESTINATIONS OUTSIDE OF THE REGION.

Policy 5A1  To ensure that the Highlands transportation system provides safe and reasonable intra-regional and inter-regional mobility.

Policy 5A2  To ensure that the Highlands transportation system affords the Highlands private economic sector, including agriculture, cost-effective transportation for raw materials, products and employees.
**Objective 5A2a**  Encourage the movement of goods from the roadway network to the freight rail network wherever possible.

**Objective 5A2b**  Evaluate opportunities to increase freight service through the reactivation of abandoned freight lines.

**Policy 5A3**  To improve public safety through implementation of traffic calming measures in areas with high pedestrian activity.

**Policy 5A4**  To provide for safe pedestrian connections including features such as sidewalks, proper lighting, shade trees and shelters consistent with NJDOT’s Pedestrian Safety Initiative.

**Policy 5A5**  To promote safe routes for children to travel to and from school in support of the NJDOT's Safe Routes to School Program.

**GOAL 5B**  MAINTENANCE OF THE LEVEL OF SERVICE ON THE EXISTING HIGHLANDS ROAD SYSTEM WITHOUT THE USE OF INFRASTRUCTURE IMPROVEMENTS THAT COULD TRIGGER ADDITIONAL DEVELOPMENT IN AREAS THAT ARE NOT APPROPRIATE FOR “GROWTH INDUCING” LAND USES.

**Policy 5B1**  To promote more efficient use of existing road capacity by appropriate means, including increased bus, van and car pool rider-ship.

**Policy 5B2**  To require through Plan Conformance and Highlands Project Review an evaluation of potential growth inducing effects such as substantial new land use, new residents, or new employment that could occur as a result of increased capacity road improvements.

**Policy 5B3**  To prohibit through Plan Conformance and Highlands Project Review road improvements in the Highlands Region in areas for which a Growth Inducing Study demonstrates that proposed improvements are likely to be growth-inducing for lands with limited or no capacity to support human development without an adverse impact on the Highlands ecosystem.

**GOAL 5C**  TRANSPORTATION IMPROVEMENTS WITHIN THE HIGHLANDS REGION THAT ARE CONSISTENT WITH THE HIGHLANDS REGIONAL MASTER PLAN.

**Policy 5C1**  To ensure, to the extent practicable, that proposed transportation improvements which are not consistent with the RMP be modified to be consistent or be re-evaluated in the context of state and regional planning goals.

**Policy 5C2**  To coordinate with NJ DOT, NJ Transit, North Jersey Transportation Planning Authority (NJTPA), counties and municipalities with regard to transportation planning and strategies within the Highlands Region.

**Objective 5C2a**  Highlands Region transportation site development activities will reflect RMP resource protection, development and redevelopment goals.

**Policy 5C3**  To limit road improvements through local development review and Highlands Project Review where roads are constrained by topography, forested lands or the community character of land uses fronting on the road.

**Policy 5C4**  To support economic development by ensuring that transportation planning and improvements support regional development, redevelopment, and tourism opportunities.
| Policy 5C5 | To recognize and support the unique needs of the agricultural industry to move farm vehicles and goods along transportation corridors, and establish safe travel routes for farmers in order to ensure the safety and viability of farming as an occupation in the Highlands Region. |
| Policy 5C6 | To require conforming municipalities to adopt a Circulation Plan Element that coordinates with the land use plan and addresses smart growth principles and consistency with the RMP. |
| Policy 5C7 | To require conforming counties to adopt a transportation plan that supports local and regional land use planning that promotes connectivity, shared service opportunities and long-term transportation network needs. |
| Policy 5C8 | To evaluate the existing and proposed Residential Site Improvement Standards (RSIS) in the context of the RMP and develop recommendations for amendments to minimize environmental impacts and maximize utility efficiency from new residential developments in a context-specific manner. |

| Policy 5D1 | To promote the use of mass transit and other alternative modes of transportation within the Highlands Region. |
| Objective 5D1a | Increase the performance of the public and private bus carrier systems within the Highlands Region. |
| Objective 5D1b | Increase overall transit ridership and the use of multi-modal transportation systems for peak hour travel. |
| Objective 5D1c | Increase employer initiated transit opportunities in the Highlands Region such as shuttle bus service, van and car pool service, and smart car options. |
| Policy 5D2 | To promote transit improvements within the Highlands Region which primarily support intra-regional mobility. |
| Policy 5D3 | To promote priority for transportation improvements which primarily improve intra-regional mobility. |
| Policy 5D4 | To promote transit improvements which will increase capacity for inter-regional mobility. |
| Policy 5D5 | To encourage and promote tourism through appropriate transportation measures, accessible transit schedules, and enhanced street furnishings and information and directional signage. |

| Policy 5E1 | To promote land use patterns that support a balance of jobs to housing as a means of... |
reducing average trip lengths.

<table>
<thead>
<tr>
<th>Objective 5E1a</th>
<th>Development and redevelopment which provides housing and jobs in close proximity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 5E1b</td>
<td>Development and redevelopment in close proximity to rail stations and along bus routes.</td>
</tr>
</tbody>
</table>

**Policy 5E2**

To promote municipal and county master plans and development regulations which facilitate the development of mixed land uses in locations that result in reduced average trip lengths, increase community and regional connectivity and support existing development patterns.

**Policy 5E3**

To promote land use patterns which facilitate use of alternative modes of transportation including walking and the use of bicycles.

**Policy 5E4**

To promote shared parking programs in support of mixed use development and redevelopment.

**Objective 5E4a**

Circulation plan element will require, where appropriate, a municipal and county evaluation of shared parking opportunities through a comprehensive parking study.

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**Part 6. Future Land Use**

The Highlands Regional Master Plan establishes a framework for future land use which guides development away from environmentally sensitive lands and agricultural lands. This framework also promotes compact development and redevelopment in or adjacent to existing developed areas where adequate public facilities are available to serve new growth and development, provided that such development and redevelopment is compatible with existing land uses and community character.

**Subpart a. Regional Guidance**

The Land Use Capability Map Series provides the basis for defining three major zones and three sub-zones of the Highlands Region, which are found in both the Preservation and Planning Areas. These zones are then related to a series of additional information layers, using both tabular results and maps, to help define the land use capability of the various parts of the Highlands Region. General policies are provided in this section for the zones.

**GOAL 6A**

USE THE HIGHLANDS LAND USE CAPABILITY MAP SERIES AS A FRAMEWORK FOR DETERMINING THE CHARACTER, LOCATION, AND MAGNITUDE OF NEW GROWTH AND DEVELOPMENT IN THE HIGHLANDS REGION.

**Policy 6A1**

To use the Land Use Capability Map Series (LUCM Series) as a geographic framework for land use planning and management within the Highlands Region.

<table>
<thead>
<tr>
<th>Objective 6A1a</th>
<th>A Highlands Land Use Capability Map Series based on the most current and available data.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 6A1b</td>
<td>A Highlands Land Use Capability Map Series based on a defined methodology which produces replicable outputs.</td>
</tr>
<tr>
<td>Objective 6A1c</td>
<td>A Highlands Land Use Capability Zone Map identifying Protection Zones, Conservation Zones and Existing Community Zones, along with environmentally constrained sub-zones for the Conservation and Existing Community Zones and Lake Community sub-zones for the Existing Community Zone.</td>
</tr>
</tbody>
</table>
Policy 6A2
To develop a program for RMP Updates for all substantive components of the RMP, based upon the receipt of new, corrected or updated factual information and verification by the Highlands Council, when and where necessary to improve the accuracy of the RMP.

Policy 6A3
To develop a program allowing the approval of municipal and county petitions (with accompanying municipal support by resolution) for Map Adjustments to the LUCM Series and other RMP maps, other than the RMP Updates addressed in Policy 6A2. Such Map Adjustments must be supported by a demonstration that they: (1) comply with the intent of the RMP, (2) are based on municipal and county planning that results in a no net increase in land use intensity from the existing LUCM Series and RMP policies, (3) support both smart growth and resource preservation, (4) provide a no net loss of Highlands resources and resource values within the municipality or HUC14 subwatershed such that all Map Adjustment protections are equal to or exceed, on a whole, the protection provided by the existing LUCM Series and RMP policies, and (5) do not result in the change in Zone, Sub-zone or Resource Area designation of any area outside of the Map Adjustment area as an indirect result of the Map Adjustment. In any case where the Map Adjustment involves a proposed adjustment to the Highlands Land Use Capability Zone Map designation from the Protection or Conservation Zone to Existing Community Zone, the demonstration must additionally meet at least five of the following standards:

- creates a meaningful opportunity for the use of Highlands Development Credits;
- reduces the net impact on Highlands natural and agricultural resources;
- improves Highlands agricultural resources or agricultural viability;
- eliminates substandard wastewater treatment facilities;
- contributes to the elimination of net water availability deficits in HUC14 subwatersheds;
- creates meaningful opportunities to provide affordable housing;
- creates meaningful employment opportunities for the residents of the Highlands Region in terms of the quantity and quality of jobs;
- improves the balance of housing and employment in a manner which reduces the length of home/work trips within the Highlands Region;
- promotes the use of alternative modes of transportation, including transit; or
- provides uses and facilities which promote eco- and/or agri-tourism.

GOAL 6B
GUIDE DEVELOPMENT AWAY FROM ENVIRONMENTALLY SENSITIVE AND AGRICULTURAL LANDS AND PROMOTE DEVELOPMENT AND REDEVELOPMENT IN OR ADJACENT TO EXISTING DEVELOPED LANDS.

Policy 6B1
To limit through Plan Conformance, local development review and Highlands Project Review, to the maximum extent permitted by law, development and use of undeveloped lands that are critical to protect, restore, or enhance sensitive environmental resources of the Highlands Region, including but not limited to Forests, Critical Habitat, Highlands Open Waters and their buffers, Riparian Areas, Steep Slopes, Prime Ground Water Recharge Areas and Wellhead Protection Areas.

Objective 6B1a
Identification of lands within the Highlands Region which contain sensitive environmental resources of the Highlands Region.

Objective 6B1b
The Protection Zone of the Highlands Land Use Capability Zone Map shall include regionally significant environmental resources to the maximum extent feasible.
<table>
<thead>
<tr>
<th><strong>Objective 6B1c</strong></th>
<th>Preparation and implementation of standards and criteria governing the use and development of land in the Protection Zone.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 6B1d</strong></td>
<td>Identification of areas within the Conservation Zone and the Existing Community Zone that contain major environmentally sensitive resources and lake communities, designation of such areas as an environmentally constrained sub-zone, and preparation and implementation of standards ensuring that development capacity is directed away from such areas to the maximum extent feasible.</td>
</tr>
<tr>
<td><strong>Objective 6B1e</strong></td>
<td>Prevent the extension or creation of water and wastewater utility services in environmentally constrained sub-zones, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.</td>
</tr>
<tr>
<td><strong>Objective 6B1f</strong></td>
<td>Preparation and implementation of standards ensuring that development protects environmentally sensitive resources in all Land Use Capability Map Zones and sub-zones.</td>
</tr>
<tr>
<td><strong>Policy 6B2</strong></td>
<td>To protect and promote agriculture by protecting and enhancing lands within the Highlands Region currently or capable of being used for agricultural purposes and ensuring that lands associated with or adjacent to agricultural lands are not developed in a manner that conflicts with the ongoing agricultural uses.</td>
</tr>
<tr>
<td><strong>Objective 6B2a</strong></td>
<td>Identification of Agricultural Resource Areas within the Highlands Region.</td>
</tr>
<tr>
<td><strong>Objective 6B2b</strong></td>
<td>The Conservation Zone of the Land Use Capability Zone Map shall include regionally significant agricultural lands within the Agricultural Resource Areas of the Highlands Region.</td>
</tr>
<tr>
<td><strong>Objective 6B2c</strong></td>
<td>Preparation and implementation of standards and criteria governing the use and development of land in the Conservation Zone to ensure conformance with the relevant policies and objectives.</td>
</tr>
<tr>
<td><strong>Policy 6B3</strong></td>
<td>To promote compatible growth opportunities that include in-fill development, adaptive re-use, redevelopment, and brownfields redevelopment in existing developed areas.</td>
</tr>
<tr>
<td><strong>Objective 6B3a</strong></td>
<td>Identification of existing developed areas and contaminated sites within the Highlands Region using the Developed Lands Analysis.</td>
</tr>
<tr>
<td><strong>Objective 6B3b</strong></td>
<td>Designation of existing previously developed areas of regional significance as the Existing Community Zone in the Highlands Land Use Capability Zone Map.</td>
</tr>
<tr>
<td><strong>Objective 6B3c</strong></td>
<td>Preparation and implementation of standards and criteria governing new growth and development activities in the Existing Community Zone to ensure conformance with the relevant policies and objectives.</td>
</tr>
<tr>
<td><strong>Policy 6B4</strong></td>
<td>To promote land uses which create a sense of place with attractive, walkable neighborhoods that support community connectivity of developed lands and community facilities.</td>
</tr>
<tr>
<td><strong>Objective 6B4a</strong></td>
<td>Communities of place with a mix of uses which promote multi-purpose trips, through proximity of neighborhood retail, commercial and entertainment uses to residential land uses that create communities that are largely self-sufficient regarding daily needs.</td>
</tr>
<tr>
<td><strong>Objective 6B4b</strong></td>
<td>Communities of place with a pattern of development which promotes walking and biking.</td>
</tr>
</tbody>
</table>
Policy 6B5  To integrate public parks and green spaces into development and redevelopment projects and ensure restoration of impaired natural resources to the extent required by law, at a minimum, and where feasible to a greater extent to maximize long term value of the project.

Policy 6B6  Provisions and standards relating to regional growth activities which increase the intensity of development shall be discretionary for conforming municipalities and counties.

Policy 6B7  Regional growth, based on local desire, should identify opportunities to maximize land use intensity while protecting natural features and community character.

Objective 6B7a  Center based development initiatives should be planned within the Existing Community Zone to meet minimum density thresholds of three dwelling units per acre. Higher densities of five dwelling units and above are encouraged in areas designated as TDR Receiving Zones. Attainment of these density thresholds is discretionary, and shall be consistent with the resource and capacity goals and requirements in this plan. Centers in the Protection Zone and Conservation Zone, potentially including clustered development, shall be at densities appropriate to the zone, the community character and the use of septic systems or community wastewater systems.

Objective 6B7b  Development and redevelopment initiatives shall maximize land use intensity provided that it enhances the existing or adjacent community while protecting local and regional natural resources.

Policy 6B8  To incorporate smart growth principles and green building design and technology in development and redevelopment initiatives.

Subpart b.  Protection Zone

The Protection Zone include lands within the Highlands Region which contain the highest quality resource value lands which are essential to maintaining and enhancing water quality and quantity and preserving ecological function. The Protection Zone includes regionally significant lands that serve to protect environmentally sensitive resources of the Highlands Region.

GOAL 6C  PRESERVATION OF THE LAND AND WATER RESOURCES AND ECOLOGICAL FUNCTION OF HIGHLANDS AREAS.

Policy 6C1  To preserve high quality land and water resources and ecological function within the Protection Zone.

Policy 6C2  To limit use and development of land in Protection Zone.

Policy 6C3  To give the highest land acquisition priority to non-preserved, undeveloped lands within the Protection Zone in the Preservation Area.

GOAL 6D  LIMITATION OF DEVELOPMENT IN PROTECTION ZONES TO DEVELOPMENT AND REDEVELOPMENT WHICH DOES NOT ADVERSELY AFFECT THE NATURAL RESOURCES OF THE HIGHLANDS REGION ECOSYSTEM.

Policy 6D1  To limit new human development in the Protection Zone to redevelopment, exempt activities, and environmentally-compatible low density new land uses, in accordance with RMP resource protection needs and water quality and quantity capacity constraints and to ensure that the impacts of development using exemptions under the Highlands
Act are considered in regional protection measures. To ensure through Plan Conformance, local development review and Highlands Project Review that any future development or redevelopment which does occur in a Protection Zone is subject to standards and criteria which protect the land and water resources of the Protection Zone from any potential adverse impact to the maximum extent possible.

To encourage owners of lands which are eligible for exemptions under the Highlands Act to voluntarily offer their land for acquisition, participate in the Highlands Development Credit program, or engage in contiguous or non-contiguous clustering in cooperation with other exempt landowners, and comply with standards and criteria which protect the land and water resources of the Highlands Region from any adverse impacts.

To establish voluntary programs whereby owners of land who are eligible for exemptions under the Highlands Act have an incentive to develop or use such exemptions in a manner which limits or mitigates any potential adverse impacts on the land and water resources of the Protection Zone.

To require that conforming municipalities and counties include land and water resource planning and management programs in their master plans and development regulations.

To encourage conforming municipalities and counties to include voluntary programs with incentives for the development or use of Highlands Act exemptions in a manner which limits or mitigates any potential adverse impacts on the land and water resources of the Protection Zones

The Conservation Zone includes lands of significant agricultural importance and associated natural resource lands which are adjacent to, or in common ownership with, land used for agricultural purposes. Development potential in the Conservation Zone is limited in location and intensity because of agricultural and natural resource protection requirements and infrastructure constraints.

To protect existing agricultural uses in the Conservation Zone from incompatible development.

To promote the expansion of sustainable and economically viable agricultural activities in the Conservation Zone not constrained by existing environmentally sensitive resources.

To limit through Plan Conformance, local development review and Highlands Project Review the use and development of lands within the Conservation Zone to agriculture use and development, including ancillary and support uses, redevelopment of existing
developed areas, and environmentally-compatible low density land uses that are to the maximum extent possible achieved in compact development patterns, to be designed and developed in a manner which is compatible with the long term use of adjacent land for agricultural purposes.

<table>
<thead>
<tr>
<th>GOAL 6G</th>
<th>CONFORMING MUNICIPALITIES AND COUNTIES INCORPORATE REGIONAL AND LOCAL LAND AND WATER RESOURCE PLANNING AND MANAGEMENT PROGRAMS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 6G1</td>
<td>To require conforming municipalities and counties to incorporate land and water resource planning and management programs for the Conservation Zone which protect natural resources from the adverse impacts and support agricultural sustainability.</td>
</tr>
<tr>
<td>Objective 6G1a</td>
<td>Municipal and county master plans and development regulations that ensure that new non-agricultural development is compatible with the long term vitality of agriculture in the Conservation Zone.</td>
</tr>
<tr>
<td>Objective 6G1b</td>
<td>Municipal and county master plans and land development regulations that require clustering or lot-averaging of non-agricultural development with a minimum of 80% of the property dedicated to agriculture and natural resources protection in order to avoid adverse impacts on agricultural uses and natural resources.</td>
</tr>
<tr>
<td>Objective 6G1c</td>
<td>Municipal and county master plans and development regulations which require appropriate and potable water, wastewater disposal and transportation facilities.</td>
</tr>
<tr>
<td>Policy 6G2</td>
<td>To require conforming municipalities and counties to include site development programs, including clustering and lot-size averaging, to protect agricultural use and development and natural resources.</td>
</tr>
</tbody>
</table>

Subpart d. Existing Community Zone

The Existing Community Zone includes those areas characterized by existing development with comparatively fewer natural resource constraints than the Protection and Conservation Zones; they often are currently or more easily served with public infrastructure. The Existing Community Zone includes previously developed lands of regional significance in size, geography and infrastructure that may include areas of opportunity for future growth and development, including development and redevelopment which may involve the use of Highlands Development Credits, provided that such growth and development are consistent and compatible with existing community character, natural resource constraints and is desired by the municipality.

<table>
<thead>
<tr>
<th>GOAL 6H</th>
<th>SUPPORT OF COMPACT DEVELOPMENT AND MAXIMIZATION OF WATER, WASTEWATER AND TRANSIT INFRASTRUCTURE INVESTMENTS FOR FUTURE USE OF LAND AND DEVELOPMENT WITHIN THE EXISTING COMMUNITY ZONE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 6H1</td>
<td>To promote compatible development and redevelopment within the Existing Community Zone.</td>
</tr>
<tr>
<td>Policy 6H2</td>
<td>To promote the restoration and redevelopment of brownfields, particularly those located in or adjacent to transportation corridors or transit stations. In cases where redevelopment is not appropriate, encourage “brownfield to greenfield” approaches.</td>
</tr>
<tr>
<td>Policy 6H3</td>
<td>To ensure that development activities within the Existing Community Zone are subject to standards and criteria which ensure that development and redevelopment...</td>
</tr>
</tbody>
</table>
Policy 6H4  
incorporate smart growth principles and do not adversely affect natural resources.

To ensure that development and redevelopment within the Existing Community Zone are served by adequate public facilities including water, wastewater treatment and transportation.

Policy 6H5  
To ensure that development and redevelopment in the Existing Community Zone are compatible with existing community character.

GOAL 6I  
PROMOTION OF MIXED USE DEVELOPMENT AND REDEVELOPMENT IN THE EXISTING COMMUNITY ZONE.

Policy 6I1  
To encourage new growth, where desired by the municipality, and development in the Existing Community Zone in the form of center based and mixed use development.

Policy 6I2  
To encourage redevelopment in the Existing Community Zone as a means to relieve development pressure from more environmentally sensitive areas.

Subpart e.  Redevelopment

Redevelopment is a planning tool that converts underutilized areas, brownfields and grayfields into new land uses through structure replacement, infill and adaptive reuse approaches. Redevelopment will help to meet the Region’s growth needs by optimizing the efficient use of previously settled areas with existing communities and available infrastructure, thus conserving natural resources and protecting drinking water. Brownfields and grayfields are two types of sites which commonly possess characteristics worthy of investigating for purposes of redevelopment. The definition of a brownfield is, “any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been or there is suspected to have been, a discharge or contaminant.” Grayfields are sites usually containing industrial or commercial facilities exhibiting signs of abandonment or underutilization in areas with existing infrastructure, but without evidence or expectation of contamination. As a concept, these sites are termed “Highlands Redevelopment Areas.” In the Preservation Area, Highlands Redevelopment Areas are limited to redevelopment sites and brownfield sites as designated by the Highlands Council, which are then eligible for waivers from the NJDEP. In the Planning Area, Highlands Redevelopment Areas include redevelopment sites and brownfield sites using the Preservation Area definition, but may in addition include grayfields and underutilized areas, depending on the LUCM Zone of the area. Infill is permissible in any of the Highlands Redevelopment Areas as long as the full designated area meets the designation requirements. Highlands Redevelopment Areas may be designated for all or a portion of individual properties or collections of contiguous parcels in part or in whole.

GOAL 6J  
ACCOMMODATION OF REGIONAL GROWTH AND DEVELOPMENT NEEDS THROUGH THE REUSE AND REDEVELOPMENT OF PREVIOUSLY DEVELOPED AREAS, INCLUDING BROWNFIELDS, GRAYFIELDS, AND UNDERUTILIZED SITES.

Policy 6J1  
To encourage Preservation Area redevelopment of sites with 70% or greater impervious surfaces or a brownfield in areas designated by the Highlands Council as Highlands Redevelopment Areas in accordance with N.J.A.C 7:38-6.6.

Policy 6J2  
To encourage redevelopment activities in the Existing Community Zone in the Planning Area on sites that meet the Preservation Area redevelopment site designation criteria, grayfields and other previously developed lands that have adequate water, wastewater, transportation capacity and are appropriate for increased land use intensity or conversion to greenfields.
| **Policy 6J3** | To encourage redevelopment activities in the Conservation and Protection Zones in the Planning Area on sites that meet the Preservation Area Highlands Redevelopment Area designation criteria, or are grayfields, and that have adequate water, wastewater, transportation capacity and are appropriate for increased land use intensity or conversion to greenfields. |
| **GOAL 6K** | RESIDENTIAL, COMMERCIAL AND INDUSTRIAL DEVELOPMENT, REDEVELOPMENT AND ECONOMIC GROWTH ARE CONCENTRATED IN DEVELOPED AREAS IN LOCATIONS WITH LIMITED ENVIRONMENTAL CONSTRAINTS, ACCESS TO EXISTING UTILITY AND TRANSPORTATION INFRASTRUCTURE, AND EXISTING COMMUNITIES. |
| **Policy 6K1** | To encourage redevelopment of brownfields, grayfields and other previously developed areas in a manner consistent with the goals and requirements of the Plan. |
| **Objective 6K1a** | Establish a Highlands Interagency Team to support and expedite redevelopment and development activities that conform to the Plan. |
| **Objective 6K1b** | Encourage and support the use of planning and financing tools that are available through state agencies and programs. |
| **Policy 6K2** | To maintain a Developed Land Inventory to encourage opportunities for land development, redevelopment and economic growth, where appropriate. |
| **Objective 6K2a** | A parcel based inventory of lands in the Highlands Region that are developed, vacant (adjacent to developed), economically underutilized, oversized residential lots, and contaminated sites, to serve as a tool for identifying and marketing sites. |
| **GOAL 6L** | CONFORMING MUNICIPALITIES AND COUNTIES CONSIDER DEVELOPMENT, REDEVELOPMENT AND BROWNFIELDS OPPORTUNITIES IN THEIR MASTER PLANS. |
| **Policy 6L1** | To require that conforming municipalities review the existing Developed Land Inventory and identify additional developed properties that are appropriate for addition to the inventory. |
| **Policy 6L2** | To require that conforming municipalities utilize the Highlands Build-out Model and Fiscal Impact Analysis as tools in the identification of appropriate areas for development, redevelopment and brownfields opportunities. |
| **Policy 6L3** | To require that conforming municipalities identify existing and planned community facilities and encourage shared service opportunities as part of the local Community Facility Plan element. |
| **GOAL 6M** | PROTECTION AND ENHANCEMENT OF HIGHLANDS RESOURCES THROUGH THE REMEDIATION OF CONTAMINATED SITES IN REGION. |
| **Policy 6M1** | Encourage and support the restoration and redevelopment or open space use of contaminated areas. |
| **Objective 6M1a** | Any restoration of contaminated sites will be conducted in accordance with the criteria required by the NJDEP’s technical requirements for site remediation (N.J.A.C. 7:26E). |
| **Objective 6M1b** | Coordinate with NJDEP on Highlands Brownfield designations and in support of a mechanism that facilitates remedial activities within the Highlands Region. |
Objective 6M1c  Evaluate mechanisms for remedial activities that apply resource protection, enhancement, and restoration approaches that allow for a minimal redevelopment footprint, encourage “brownfields to greenfields” approaches, and include green energy and building concepts.

Objective 6M1d  Determine if enhanced standards for remediation activities will be required to achieve both resource protection goals and remedial requirements for Highlands Resources. Enhance interagency coordination regarding the evaluation of site design and development for contaminated properties in support of RMP policies.

Subpart f.  Smart Growth

Smart growth is an approach to resource planning and management where growth and development are concentrated and organized around “centers” with compact, walk-able, bicycle-friendly land use patterns, typically including mixed-use development with a range of housing choices. It generally reflects value for long-range, regional considerations of sustainability over short-term economic benefits. Smart growth promotes land use patterns with a sense of community and place, multi-modal and alternative use of modes of transportation, a balance of employment and housing and an equitable distribution of the costs and benefits of development. It also includes the preservation and enhancement of natural and cultural resources. Finally, as an efficient and less automobile dependent pattern and form of growth, it reduces energy use, which in turn improves air quality and reduces carbon dioxide emissions linked to global warming.

GOAL 6N  USE OF SMART GROWTH PRINCIPLES TO GUIDE DEVELOPMENT AND REDEVELOPMENT IN THE HIGHLANDS REGION.

Policy 6N1  To establish smart growth programs for use within the Highlands Region to guide and control development and redevelopment throughout the Highlands Region.

Objective 6N1a  Conservation development standards which protect natural resources, environmentally sensitive areas, open space and agricultural lands, and enhance community character.

Objective 6N1b  Local development review programs which require a site specific analysis of environmental features and constraints of the property proposed for development as a basis for determining compliance with Smart Growth requirements.

Objective 6N1c  Flexible local development review and Highlands Project Review programs, including reduction of minimum setbacks, modification of uniform road frontage requirements, increase in maximum permitted height or allowing non-contiguous clustering of development entitlements where necessary to mitigate or eliminate adverse impacts on Highlands natural resources.

Objective 6N1d  Development standards which recognize that portions of a parcel proposed for development which are not developable may be considered for the purpose of satisfying on-site passive open space requirements.

Objective 6N1e  Minimum requirements that all development include energy efficient features in site layouts and all structures.

Objective 6N1f  Minimum requirements for water conservation measures in site layout and structures, including but not limited to water efficient landscaping (including use of native and drought-tolerant plant species), rain collection systems, use of gray water, and water-efficient landscape irrigation.

Objective 6N1g  Strict limitation of site disturbance, clearing and grading to the minimum necessary to make reasonable use of the designated building envelope for the parcel proposed for
Objective 6N1h  Minimum requirements for use of micro-climate conditions to maximize solar gain for winter heating and minimize solar gain during high temperature summer conditions.

Objective 6N1i  Minimum requirements for re-use and recycling of building materials when development involves demolition.

Policy 6N2  To require municipalities to adopt low impact development standards to protect the natural hydrologic features of the land.

Objective 6N2a  Implementation of on-site stormwater management features that maintain, restore and enhance the pre-existing natural drainage patterns of the site.

Objective 6N2b  Strict limitations on the amount of impervious cover allowed on a site as a means to increase stormwater infiltration and reduce stormwater runoff.

Objective 6N2c  Minimum requirements for site-specific hydrologic studies during local development review and Highlands Project Review which identify the velocity, volume and pattern of water flow into, through, and off of the parcel proposed for development.

Objective 6N2d  Minimum requirements that stormwater management systems employ a “design with nature” approach.

Objective 6N2e  Minimum requirements for use of grass channels, dry swales, wet swales, infiltration basins, bio-swales and water gardens, green roofs, and other low impact approaches to attenuate and control stormwater and provide multiple environmental benefits.

Policy 6N3  To require conforming municipalities and counties to incorporate programs for community and neighborhood design that support a variety of housing options for people with different income levels and different needs, mixed uses, redevelopment, adaptive re-use of historic sites and structures, and infill development in their master plans and development regulations.

Subpart g.  Housing

The Highlands Regional Master Plan seeks to address a full range of housing needs for the Region. This includes the needs to address low and moderate income ranges as well as middle and upper income housing needs. In addition, the Region should support a variety of housing types such as rental housing, multi-family housing, age-restricted housing, and supportive and special needs housing. The Highlands Regional Master Plan seeks to provide mechanisms to address the need to have a full range of variety and choice in housing opportunities in the Highlands Region.

GOAL 6O  MARKET-RATE AND AFFORDABLE HOUSING SUFFICIENT TO MEET THE NEEDS OF THE HIGHLANDS REGION.

Policy 6O1  To establish a region-wide, comprehensive approach to addressing residential needs in the Highlands Region, serving all age groups, income levels, and mobility options. Conforming municipalities must prepare and submit a petition for substantive certification to the Council on Affordable Housing (COAH).

Objective 6O1a  To develop a comprehensive Highlands housing program addressing regional housing needs within the context of preserving the character and environmental integrity of the Highlands.

Objective 6O1b  To develop an interagency partnership with COAH in support of a conforming municipality’s substantive certification plan development and regional affordable
### Housing Needs

<table>
<thead>
<tr>
<th>Policy 6O2</th>
<th>To promote center-based development approaches that recognize and address a mix of housing types including affordable housing, support mixed uses where appropriate, and implement compact development approaches in the Existing Community Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 6O3</td>
<td>To promote affordable housing within new residential and mixed use development, redevelopment, or adaptive reuse projects in the Existing Community Zone and where appropriate throughout the Highlands Region.</td>
</tr>
<tr>
<td>Policy 6O4</td>
<td>To require that conforming municipalities which have not submitted a Petition for Substantive Certification to COAH prepare and submit a complete Petition for Substantive Certification.</td>
</tr>
<tr>
<td>Policy 6O5</td>
<td>To require that conforming municipalities update the Housing Plan Element of their municipal master plan to reflect current conditions, implications of the RMP, and the informational needs related to their Petition for Substantive Certification to COAH.</td>
</tr>
</tbody>
</table>

### Part 7. Landowner Fairness

The Highlands Act recognizes that implementation of the Regional Master Plan, which directs and guides future development, inevitably has an impact on reasonable landowner expectations regarding future land use potential. The Act provides several mechanisms that seek to mitigate such impacts, including a transfer of development rights (TDR) program, land acquisition, exemptions, and waivers.

The Act requires the Highlands Council to establish a regional Highlands TDR program. This is intended as an equitable means of guiding human development away from sensitive lands in the Preservation Area to areas both within the Planning Area as well as outside the boundaries of the Highlands Region but within other parts of the seven Highlands counties which are suitable for more intense human development. The Act contemplates that transferable development rights will be allocated to the owners of land within the Preservation Area which should be developed not at all or at very low densities and impacts, and that voluntary TDR Receiving Zones for Highlands Development Credits will be identified. The Highlands TDR Program is required to be consistent with the State Transfer of Development Rights Act, except as otherwise expressly provided for in the Highlands Act TDR provisions. (Section 13.a)

The Highlands Regional Master Plan also recognizes the need to set priorities for acquisition or purchase of conservation easements in those lands within the Region that have the most significant resource values. To this end, the Plan includes numerous policies to address open space acquisition and farmland preservation.

The Highlands Act also includes seventeen (17) exemptions. If a project or activity falls within one of these seventeen exemptions, the project or activity is exempt from the Highlands Act, the Highlands Preservation Area rules adopted by the NJDEP, the Regional Master Plan, and any municipal master plan or development regulations that are revised to conform to the Regional Master Plan.

Tens of thousands of acres throughout the Region could potentially be developed under the exemptions based upon an analysis conducted by the Highlands Council. While the exemptions are one of the primary means for landowners to utilize their properties where development potential is limited by the Highlands Act, the exercise of these exemptions may result in further fragmentation of the Region’s ecosystems and the construction of additional impervious surface. Given this circumstance, the Regional Master Plan addresses the need to develop voluntary programs that attempt to mitigate these impacts, including programs to encourage non-contiguous clustering, intra-local government transfers of development rights and economic incentives.

In addition to the exemptions, the Act also provides NJDEP with the authority to grant waivers from its Highlands rules on a case by case basis under certain circumstances. Under this authority, NJDEP may issue waivers (1) where a project or activity is necessary in order to protect public health and safety; (2) for redevelopment in previously developed areas as identified by the Highlands Council, provided that the areas are
either a brownfield site designated by NJDEP or a site at which at least 70% of the area thereof is covered with impervious surface; or (3) necessary to avoid a taking of property without just compensation.

<table>
<thead>
<tr>
<th>GOAL 7A</th>
<th>PROTECTION OF LANDS THAT HAVE LIMITED OR NO CAPACITY TO SUPPORT HUMAN DEVELOPMENT WITHOUT COMPROMISING THE ECOLOGICAL INTEGRITY OF THE HIGHLANDS REGION, THROUGH MECHANISMS INCLUDING BUT NOT LIMITED TO A REGION-WIDE TRANSFER OF DEVELOPMENT RIGHTS PROGRAM.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy 7A1</strong></td>
<td>Transferable development rights shall be used by willing municipalities to guide growth and development away from ecologically sensitive lands in the Preservation Area and towards lands within the Planning Area which have the capacity to support additional human development without compromising the ecological integrity of the Highlands Region. These rights shall also be used to guide growth towards lands outside of the Highlands Region, but within the seven Highlands counties, to willing municipalities.</td>
</tr>
<tr>
<td><strong>Objective 7A1a</strong></td>
<td>Creation of a region-wide Highlands TDR program as soon as practicable.</td>
</tr>
<tr>
<td><strong>Objective 7A1b</strong></td>
<td>Identification and implementation of any and all program elements which would promote the transfer and use of development rights.</td>
</tr>
<tr>
<td><strong>Policy 7A2</strong></td>
<td>To maximize the preservation of Preservation Area properties that are not in the Existing Community Zone or Highlands Redevelopment Area, with emphasis on properties with the highest Conservation Priority scores, through acquisition or donation of fee simple and easement ownership.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOAL 7B</th>
<th>PROVISION FOR COMPENSATION TO LANDOWNERS IN THE PRESERVATION AREA WHOSE PROPERTIES HAVE LIMITED OR NO CAPACITY TO SUPPORT ADDITIONAL DEVELOPMENT AND WHO ARE DISPROPORTIONATELY BURDENED BY THE PROVISIONS OF THE HIGHLANDS ACT THROUGH A REGION-WIDE PROGRAM OF TRANSFERABLE DEVELOPMENT RIGHTS.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy 7B1</strong></td>
<td>The Highlands TDR program shall seek to mitigate impacts of the Highlands Act and the Highlands RMP on reasonable landowner development expectations which have been disproportionately affected.</td>
</tr>
<tr>
<td><strong>Policy 7B2</strong></td>
<td>The Highlands TDR program shall establish a transferable development right to be known as a “Highlands Development Credit.”</td>
</tr>
<tr>
<td><strong>Policy 7B3</strong></td>
<td>All lands within the Preservation Area, except for those in the Existing Community Zone and approved Highlands Redevelopment Areas, shall be Sending Zones under the Highlands TDR Program. (At a future time, lands within the Protection Zone and Conservation Zone of the Planning Area may also serve as Sending Zones.)</td>
</tr>
<tr>
<td><strong>Policy 7B4</strong></td>
<td>The Highlands TDR program shall provide for the allocation of Highlands Development Credits to landowners in the Preservation Area where reasonable future development expectations have been disproportionately limited by the provisions of the Highlands Act or implementation of the programs established by the RMP.</td>
</tr>
<tr>
<td><strong>Policy 7B5</strong></td>
<td>Land in the Preservation Area located in the Existing Community Zone shall not be eligible for an allocation of Highlands Development Credits.</td>
</tr>
<tr>
<td><strong>Policy 7B6</strong></td>
<td>Establish a Highlands TDR program which is sufficiently certain and predictable to allow sending zone landowners to sell Highlands Development Credits or borrow against the value of such credits.</td>
</tr>
<tr>
<td>Objective 7B6a</td>
<td>Establishment of criteria for eligibility for an allocation of Highlands Development Credits.</td>
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</tr>
<tr>
<td>Objective 7B6b</td>
<td>Creation of a process by which affected landowners can apply to the Highlands Council for an allocation of Highlands Development Credits.</td>
</tr>
<tr>
<td>Objective 7B6c</td>
<td>Establishment of a Highlands Development Credit conveyance system, including covenants and restrictions on the use of Sending Zone parcels.</td>
</tr>
<tr>
<td>Objective 7B6d</td>
<td>Creation of a tracking system for Highlands Development Credits which provides public records for the transfer and use of Highlands Development Credits.</td>
</tr>
<tr>
<td>Objective 7B6e</td>
<td>Establishment of Receiving Zones where Highland Development Credits can be used as soon as possible.</td>
</tr>
<tr>
<td>Objective 7B6f</td>
<td>Active transfer and use of Highlands Development Credits throughout the Highlands Region and the seven Highlands counties.</td>
</tr>
<tr>
<td>Objective 7B6g</td>
<td>Review and assessment of the Highlands TDR Program five (5) years after the effective date of the Highlands RMP.</td>
</tr>
</tbody>
</table>

| Policy 7B7 | The determination as to whether a particular parcel of land is disproportionately limited by the provisions of the Highlands Act or implementation of the Highlands RMP shall be based upon the development potential as of August 9, 2004 based upon municipal zoning and land use regulations then in effect; State and federal environmental laws and regulations then in effect; and a determination of whether development is precluded or severely constrained by the restrictions imposed pursuant to the Highlands Act. |

| Policy 7B8 | The allocation of Highlands Development Credits to individual Sending Zone parcels shall be adjusted according to the location of the parcel within the Highlands Region, the comparative development potential of the parcel, the regional resource value of the parcel, and likelihood of the parcel’s development under an exemption. |

<table>
<thead>
<tr>
<th>GOAL 7C</th>
<th>CREATION OF A HIGHLANDS DEVELOPMENT CREDIT BANK</th>
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<tbody>
<tr>
<td>Policy 7C1</td>
<td>A Highlands Development Credit Bank shall be created and become operational as soon as possible.</td>
</tr>
<tr>
<td>Policy 7C2</td>
<td>The Highlands Development Credit Bank shall be authorized to serve and shall serve as a region-wide information clearinghouse.</td>
</tr>
<tr>
<td>Policy 7C3</td>
<td>The Highlands Development Credit Bank shall be authorized to buy and sell Highlands Development Credits.</td>
</tr>
<tr>
<td>Policy 7C4</td>
<td>The Highlands Development Credit Bank shall be authorized to serve as the official records keeper of the Highlands TDR Program, including recording and tracking all Highlands Development Credit transactions and use.</td>
</tr>
<tr>
<td>Policy 7C5</td>
<td>The Highlands Development Credit Bank shall be authorized to enter into any agreement which promotes the transfer and use of Highlands Development Credits, provided that the substance of the agreement is not in conflict with any express provision of the Highlands Act or the State Transfer of Development Rights Act (N.J.S.A. 40:55D-137 et seq.).</td>
</tr>
<tr>
<td>Policy 7C6</td>
<td>The Highlands Development Credit Bank should establish a program for the purchase of Highlands Development Credits as soon as possible.</td>
</tr>
</tbody>
</table>
### Policy 7C7
To provide an opportunity for landowners who receive an allocation of Highlands Development Credits to sell their Highlands Development Credits in advance of the establishment of Receiving Zones through municipal Plan Conformance.

### Objective 7C7a
Funding for the purchase of Highlands Development Credits prior to the establishment of Receiving Zones pursuant to municipal Plan Conformance.

### Objective 7C7b
A purchase of Highlands Development Credits program which gives priority to landowners who can demonstrate unique and extenuating financial circumstances as a direct result of the Highlands Act.

### Policy 7C8
The Highlands Development Credit Bank shall monitor real estate values throughout the Highlands region and shall submit an annual report to the Highlands Council, including a recommendation with regard to the minimum value of a Highlands Development Credit.

### Policy 7C9
To secure sufficient capitalization for operation of the Highlands Development Credit Bank.

### GOAL 7D
**ESTABLISHMENT OF SUFFICIENT HIGHLANDS RECEIVING ZONES TO CREATE A POSITIVE MARKET FOR TDR CREDITS**

#### Policy 7D1
Lands located within the Existing Community Zone, and Highlands Redevelopment Areas, may be designated as Receiving Zones by a Highlands municipality upon approval by the Highlands Council in conformance with the RMP.

#### Policy 7D2
Lands located with the Conservation Zone may be designated as Receiving Zones by a Highlands municipality upon approval of the Highlands Council, provided that such Receiving Zones are consistent with the RMP and the development does not conflict with the maintenance of viable agriculture.

#### Policy 7D3
Lands located within a Highlands County, but not within the Highlands Region may be also designated as Receiving Zones by the municipality.

#### Policy 7D4
Highlands municipalities in the Planning Area may seek designation of Receiving Zones and participate in the Highlands TDR program without regard to whether such municipality is in conformance with the Highlands RMP.

#### Policy 7D5
The Highlands Council shall provide technical assistance to Highlands municipalities in support of designating appropriate Receiving Zones.

#### Policy 7D6
The Highlands Council shall provide Highlands municipalities with financial grants-in-aid for planning and feasibility studies in support of designating appropriate Receiving Zones.

#### Policy 7D7
A Highlands municipality may limit the use of Highlands Development Credits to intramunicipal transfers in designated Receiving Zones if the Highlands Council determines that the goals, policies and objectives of the Highlands RMP will be best served by a determination of conformance, notwithstanding the limited use of Highlands Development Credits within the municipality.

### GOAL 7E
**MAXIMIZATION OF THE TRANSFER AND USE OF HIGHLANDS DEVELOPMENT CREDITS.**

#### Policy 7E1
To develop and implement incentive mechanisms to create the highest possible demand for Highlands Development Credits.
<table>
<thead>
<tr>
<th>Policy 7E2</th>
<th>To identify ways and means by which the highest possible value of Highlands Development Credits can be achieved.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 7E3</td>
<td>To promote the availability of capital funding for municipal infrastructure which is required to support additional human development using Highlands Development Credits.</td>
</tr>
<tr>
<td>Policy 7E4</td>
<td>To seek and support priority allocation of available State and federal funding for Highlands municipalities which have established Receiving Zones for Highlands Development Credits.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOAL 7F</th>
<th>USE OF SMART GROWTH PRINCIPLES IN THE HIGHLANDS REGION THROUGH THE HIGHLANDS TDR PROGRAM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 7F1</td>
<td>The Highlands TDR program shall be used as a means of promoting smart growth within the Highlands Region through the use of Highlands Development Credits in areas which are suitable for additional human development on a fiscally beneficial basis in designated voluntary Receiving Zones where adequate public facilities are available or can be provided on a cost-effective basis.</td>
</tr>
<tr>
<td>Policy 7F2</td>
<td>The Highlands TDR program shall be used as a means of promoting in-fill and community redevelopment in Existing Community Zones within the Planning Area.</td>
</tr>
<tr>
<td>Policy 7F3</td>
<td>The Highlands Council shall seek funding in support of in-fill and community development in the Existing Community Zones within the Planning Area which involves the use of Highlands Development Credits.</td>
</tr>
<tr>
<td>Policy 7F4</td>
<td>The Highlands Council shall not find a Highlands municipality in conformance with the Highlands RMP unless the municipal master plan and development regulations require the use of equivalent Highlands Development Credits for any locally approved increases in development or redevelopment density or intensity of use through variances or municipal ordinance modification that occur after the date of Highlands Council determination of conformance.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>GOAL 7G</th>
<th>MITIGATION TO THE MAXIMUM EXTENT POSSIBLE OF THE IMPACTS OF EXEMPT DEVELOPMENT ON THE ECOSYSTEM INTEGRITY OF THE HIGHLANDS REGION THROUGH USE OF INNOVATIVE LAND USE PROGRAMS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy 7G1</td>
<td>To encourage municipalities with jurisdiction over lands which are entitled to an exemption under Section 30 of the Highlands Act to establish voluntary, incentive-based innovative land use programs to avoid adverse impacts on the Highlands ecosystem or the fiscal integrity of the municipality.</td>
</tr>
<tr>
<td>Objective 7G1a</td>
<td>Establish an intra-municipal transfer of development rights program for landowners whose property is entitled to an exemption under Section 30 of the Highlands Act and who voluntarily apply for and receive transferable development rights under a municipal TDR program.</td>
</tr>
<tr>
<td>Objective 7G1b</td>
<td>Establish municipal clustering programs which allow landowners whose property is entitled to an exemption under the Highlands Act, for both contiguous and non-contiguous properties, to minimize the impact of such exempted development on the ecological integrity of the Highlands Region or the fiscal integrity of the municipality.</td>
</tr>
<tr>
<td>Policy 7G2</td>
<td>To provide an opportunity for landowners whose property is entitled to an exemption</td>
</tr>
</tbody>
</table>
under the Highlands Act to voluntarily apply for and receive an allocation of Highlands Development Credits in lieu of developing on-site under the provisions of Section 30.

Part 8. Sustainable Economic Development

The long term integrity of the Highlands Region involves maintenance of the economic and fiscal vitality of the Highlands communities as well as preservation of its natural resources. It also involves economic development, particularly if it involves the sustainable use of the natural resources of the Region, such as agriculture and forestry. Economic development comes in a variety of sizes and forms and the exceptional quality of life in the Highlands Region makes some of the Existing Community Zone of the Region particularly appropriate for technology-dependent enterprises of all sizes ranging from home occupations to corporate headquarters. Economic vitality in the Highlands Region must be sustainable over time, to avoid damage to natural resources and community character. It must depend heavily on renewal and improvement of economic output without continual development of undeveloped lands.

<table>
<thead>
<tr>
<th>GOAL 8A</th>
<th>SUSTAINABLE ECONOMIC DEVELOPMENT IN THE HIGHLANDS REGION.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy 8A1</strong></td>
<td>To promote appropriate, sustainable and environmentally compatible economic development throughout the Highlands Region.</td>
</tr>
<tr>
<td><strong>Objective 8A1a</strong></td>
<td>Establish a Highlands Economic Development Program which identifies sustainable economic development opportunities and strategies for recruiting and promoting such development in the Highlands Region.</td>
</tr>
<tr>
<td><strong>Objective 8A1b</strong></td>
<td>Serve as a technical resource and advocate for Highlands economic development assistance in working with municipalities, counties, regional agencies and the private sector to promote sustainable economic development in the Highlands Region on a coordinated basis.</td>
</tr>
<tr>
<td><strong>Policy 8A2</strong></td>
<td>To promote economic sustainability in the Highlands Region through sound employment and wage earning opportunities across a variety of employment sectors that has a positive fiscal impact on local governments.</td>
</tr>
<tr>
<td><strong>Policy 8A3</strong></td>
<td>To pursue state and federal financial assistance for sustainable economic development in the Highlands Region.</td>
</tr>
<tr>
<td><strong>Policy 8A4</strong></td>
<td>To serve as a clearinghouse for economic development opportunities in the Highlands Region.</td>
</tr>
<tr>
<td><strong>Objective 8A4a</strong></td>
<td>Identification and marketing of Highlands Region areas including brownfield sites that may be appropriate for local and regional redevelopment initiatives.</td>
</tr>
<tr>
<td><strong>Objective 8A4b</strong></td>
<td>State agency coordination of economic development funding and programs that support Highlands Region development and redevelopment areas.</td>
</tr>
<tr>
<td><strong>Objective 8A4c</strong></td>
<td>A regional parcel-based economic support program for identifying Council and local-approved and ongoing redevelopment opportunities for enhanced growth.</td>
</tr>
<tr>
<td><strong>Policy 8A5</strong></td>
<td>To conduct original research in regard to catalytic economic initiatives which would promote and support the long term economic sustainability of the Highlands Region.</td>
</tr>
<tr>
<td><strong>Objective 8A5a</strong></td>
<td>A long-term economic tracking program as a means to continually assess the long-term economic progress of the Region through specified economic indicators in order to establish Highlands trends.</td>
</tr>
<tr>
<td><strong>Policy 8A6</strong></td>
<td>To be an active advocate for appropriate public investment in the Highlands Region through the location of public facilities and institutions in the Highlands Region.</td>
</tr>
</tbody>
</table>
### Policy 8A7
To require an economic plan element considering all aspects of economic development and sustained economic vitality including:

<table>
<thead>
<tr>
<th>Objective 8A7a</th>
<th>Develop protocols required for economic plan elements, including instruction on tracking and reporting of regional economic indicators.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 8A7b</td>
<td>A comparison of the types of employment expected to be provided by the economic development to be promoted, with the characteristics of the residing labor pool in the municipality and nearby areas.</td>
</tr>
</tbody>
</table>

### GOAL 8B
**PRESERVATION AND ENHANCEMENT OF AGRICULTURE IN THE HIGHLANDS REGION.**

<table>
<thead>
<tr>
<th>Policy 8B1</th>
<th>To preserve and enhance the sustainable economic benefits of agricultural practices in the Highlands Region.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 8B1a</td>
<td>Coordinated activities with the NJ Department of Agriculture and other entities to ensure that existing economic programs to sustain agriculture are maximized.</td>
</tr>
<tr>
<td>Policy 8B2</td>
<td>To expand and enhance the agricultural economy in the Highlands Region.</td>
</tr>
<tr>
<td>Objective 8B2a</td>
<td>Coordinated activities with the NJ Department of Agriculture and other entities to improve opportunities for sustainable agricultural operations that improve farm incomes and the long-term viability of farming.</td>
</tr>
</tbody>
</table>

### GOAL 8C
**THE EXPANSION OF TOURISM AND RECREATION WITHIN THE HIGHLANDS REGION.**

<table>
<thead>
<tr>
<th>Policy 8C1</th>
<th>To promote sustainable economic development such as recreation and tourism which derive economic benefit from sustainable use of the natural resources of the Highlands Region.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 8C1a</td>
<td>Identification of specific economic development initiatives which would encourage and promote eco-, agro- and heritage tourism in the Highlands Region.</td>
</tr>
<tr>
<td>Objective 8C1b</td>
<td>Evaluation of the feasibility of establishing transit-oriented tourism connections and opportunities.</td>
</tr>
<tr>
<td>Objective 8C1c</td>
<td>Evaluation of economic feasibility of alternative forms of overnight accommodations to promote recreation and tourism.</td>
</tr>
<tr>
<td>Policy 8C2</td>
<td>To establish a certified eco-, agro- and heritage tourism program.</td>
</tr>
<tr>
<td>Objective 8C2a</td>
<td>Identification of the necessary elements of a sustainable and comprehensive tourism program for the Highlands Region.</td>
</tr>
<tr>
<td>Objective 8C2b</td>
<td>Creation of a formal tourism program for the Highlands Region.</td>
</tr>
<tr>
<td>Policy 8C3</td>
<td>To allow small-scale overnight accommodations in the Protection Area and the Conservation Area subject to strict environmental performance standards as a part of a certified eco- or agri- tourism use or activity.</td>
</tr>
<tr>
<td>Objective 8C3a</td>
<td>Evaluation of the feasibility of alternative tourism attractions which would enhance the attractiveness of the Highlands Region as a tourism destination such as a summertime performance venue or regional bike and hike events.</td>
</tr>
</tbody>
</table>
Policy 8C4
To advocate for state and federal funding of recreation and tourism initiatives in the Highlands Region.

Policy 8C5
To facilitate coordinated marketing of public and private tourist attractions in the Highlands Region, such as historic, cultural, scenic, and recreation sites, as well as tourism uses such as bed and breakfast inns, restaurants, bicycle rentals, and provisioners.

GOAL 8D
EXPANSION OF INNOVATIVE TECHNOLOGY AND ENTREPRENEURIAL BUSINESSES INCLUDING HOME OFFICE, ENERGY EFFICIENCY AND RESOURCE CONSERVATION ENTERPRISES IN THE HIGHLANDS REGION.

Policy 8D1
To ensure opportunities for home office, entrepreneurial and other small business activities in the Highlands Region.

Objective 8D1a
Municipal and county master plans and development regulations which permit the establishment of home occupations, small business incubator programs and innovative technologies that promote compact design, native species landscaping, low impact development, energy efficiency and resource conservation in support of comprehensive RMP goals.

GOAL 8E
ESTIMATE AND TRACK OVER TIME THE COSTS ASSOCIATED WITH PROTECTING CRITICAL RESOURCES OF THE HIGHLANDS REGION, IN TERMS OF COSTS RELATED TO PLAN IMPLEMENTATION

Policy 8E1
The Cash Flow Timetable shall track the revenues and costs associated with the Highlands Protection Fund, with the exception of the Pinelands Property Tax Stabilization Aid category. Four components that shall be tracked in the Cash Flow Timetable include:

- Planning Grants Program (including Incentive Planning Aid and Regional Master Plan Compliance Aid);
- Highlands Property Tax Stabilization Aid;
- State Aid for Local Government Units (Watershed Moratorium Offset Aid and other State Aid funding); and
- Land Acquisition Tracking.

Part 9. Air Quality

The Highlands Act recognizes that the Highlands Region includes “exceptional natural resources such as clean air” (Section 2) and the Highlands Regional Master Plan seeks to establish mechanisms for the protection and enhancement of air quality resources for the Highlands Region that consider the interplay of air quality conditions at local, regional, interstate, and global levels.

GOAL 9A
REDUCTION OF AIR POLLUTATION THROUGH USE OF ALTERNATIVE AND EFFICIENT MODES OF TRANSPORTATION AND THE USE OF RENEWABLE ENERGY SOURCES.

Policy 9A1
To encourage capital facility development and redevelopment that leads to attainment of the National Ambient Air Quality Standards (NAAQS).

Policy 9A2
To monitor performance of major air toxic point sources that affect the Region and
**Policy 9A3**  
Promote source reduction measures to address quality concerns.  
To encourage land use development and redevelopment practices that promote center-based growth and mixed-use development and offer alternative modes of transportation as a means to reduce automobile dependency, vehicle miles traveled, vehicle trip length, and duration, for the reduction of local and regional air pollutants and of carbon dioxide emissions linked to global warming.

**Policy 9A4**  
To encourage and support state and federal regulatory action to reduce levels of air pollutants including but not limited to: ozone, sulfur dioxide, and fine particulate matter pollutants in the Highlands Region.

**Policy 9A5**  
To implement resource protection standards to provide for the protection of air quality on a site-specific basis during local development review and Highlands Project Review.

**Objective 9A5a**  
Encourage plans for development activities to include an evaluation of auto emissions, ambient air toxics, and hazardous air pollutants.

**Policy 9A6**  
To support State and federal initiatives that will reduce air pollution in Warren County and the Region due to out-of-State power plant air pollution.

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### Part 10. Local Participation

The Highlands Act calls for local participation in the Regional Master Plan and its implementation. Plan Conformance is voluntary in the Planning Area and mandatory in the Preservation Area. In both cases, municipal participation in the ongoing planning process will be critical. Coordination with and participation of other governmental and non-governmental interests will also be vital to Plan success.

**GOAL 10A**  
**MAXIMIZE MUNICIPAL PARTICIPATION TO ENSURE THE REGIONAL MASTER PLAN ACHIEVES ITS LONG TERM GOAL OF PROVIDING PROTECTION AND ENHANCEMENT OF THE SIGNIFICANT RESOURCES AND MAINTAINING A SUSTAINABLE ECONOMY IN THE HIGHLANDS REGION.**

**Policy 10A1**  
To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State and federal agencies.

**Policy 10A2**  
To ensure sufficient local participation in the development of the RMP and on-going work of the Highlands Council.

**Objective 10A2a**  
Engage stakeholder groups and individuals in public participation opportunities that provide meaningful input in the Highland Council planning process.

**Policy 10A3**  
To ensure maximum RMP Conformance by municipalities and counties to achieve the highest level of protection for all important natural systems and resources of the Highlands.

**Objective 10A3a**  
Provide benefits and incentives to municipalities and counties that conform to the RMP.

**Policy 10A4**  
To monitor and track the long-term success of the RMP.

**Objective 10A4a**  
Prepare a Highlands RMP Monitoring Review Report triennially to ensure that the RMP is meeting its goals.
CHAPTER V. PROGRAMS

The Goals, Policies and Objectives of Chapter IV provide detailed statements of intent and standards for the Regional Master Plan. This chapter provides an overview of how these concepts will be implemented through “programs” – approaches to specific environmental or planning issues that respond to the relevant Goals, Policies and Objectives for that topic. The programs include an issue overview, a discussion of relevant Policies and Objectives that are addressed by the program, a program summary, and a series of program components that, in combination, encompass the program itself. Many Goals, Policies and Objectives are addressed by programs in this chapter. Others are addressed in Chapter VI on Implementation, such as Plan Conformance, Consistency and Coordination, Highlands Project Review, and RMP Improvements. It is important to note that the provisions of Chapter V (Programs) and Chapter VI (Implementation) shall be governed by the specific standards set for in the Goals, Policies and Objectives.

The programs in this chapter are grouped according to the Parts of the Goals, Policies and Objectives, as follows:

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Part 1. Natural Resources

Forest Resource Management and Sustainability

Issue Overview: The Highlands Region contains some of the most important forests in New Jersey. These forests are vitally important to every element of the Highlands...
Highlands Final Draft Regional Master Plan

Region, including the natural and the built environment. Forests provide essential ecosystem functions, including surface water filtration, which is important to protecting essential drinking water supplies for the Highlands Region and for the state as a whole. Forests serve as habitat for plants and animals and are critically important to the maintenance of biodiversity in one of the most populous states in the nation. In addition, when managed for sustainable use, forests can be as source of renewable wood products as well as alternative forest products. Forests are a defining visible and functional feature of the Highlands and constitute a majority of critical habitat in the Region.

Current forest management practices, incentives and regulations are evaluated that will support the continuation and enhancement of science based management of the forest resource for long term societal benefits for future generations. Despite being the most densely populated state in the nation, forests cover 45% of New Jersey’s land mass and 54% of the total of land area (approximately 464,200 acres) of the Highlands Region.

RMP Policies and Objectives Addressed

Policy 1A2. To limit human development in the Forest Resource Area in the Preservation Area in order to protect and enhance forest resources, critical habitat and the quantity and quality of water resources.

Objective 1A2c. To prohibit through local development review and Highlands Project Review the deforestation of lands within the Forest Resource Area of the Preservation Area for human development except where authorized as an exemption by the Highlands Act.

Objective 1B1c. Implementation of programs which encourage the inclusion of appropriate wildlife and invasive species management techniques in Forest Management Plans adopted by any federal, state, county or municipal government entity.

Policy 1B3. To limit through local development review and Highlands Project Review deforestation in the Forest Resource Area and forested lands within High Integrity Forest Subwatersheds within the Existing Community Zone to maximum extent practicable.

Policy 1B5. To ensure that forest resources are protected on a site specific basis during local development review and Highlands Project Review.

Policy 1B6. To establish standards and criteria for sustainable forestry activities in order to conserve and enhance the Forest Resource Areas and forested lands within High Integrity Forest Subwatersheds within the Highlands Region.

Policy 1C1. To require that conforming municipalities and counties address the protection of forested portions of Forest Resource Areas and High Integrity Forest Subwatersheds in their master plans and development regulations.

Objective 1C1a. Maintain forest cover to the maximum extent possible in the Highlands Region in the natural as well as the built environment.

Policy 1C2. To develop technical guidelines and procedures to assist municipalities and counties in the development of forest mitigation and community forestry plans for inclusion in municipal and county master plans and development regulations.

Objective 1C2a. Technical guidelines and procedures for development and implementation of low impact development best management practices to
protect, enhance and restore forest resources.

**Objective 1C2c.** A model municipal tree ordinance for municipalities that allows active forest management with approved Forest Management Plans.

Program Summary

This program seeks to balance the need to protect the forest resource, biodiversity and water resources with the economic use and continued sustainable management of forests while promoting active stewardship to provide/optimize the multiple benefits and services forests provide including clean air, clean water, soil protection, recreation, wildlife habitat and forest products. The foundation has been set for continued scientific management and long term sustainability of the forest resource in the Highlands Area.

A forest is far more than trees. It is a complex ecosystem – ever changing and defined by the interactions of living organisms and the surrounding environment. A native, healthy and diverse forest cover is the preferred land use to protect water quality and quantity. The multiple benefits and values provided by these forests are realized by society as a whole while the individual landowners are responsible for the care and stewardship of this resource.

For long term sustainability of the forest resource in the Highlands there must be proactive management of deer populations, non-native invasive species and reductions in the rate of forest fragmentation.

- Criteria and indicators are needed to measure the sustainability of the forest resource. Data need to be collected to assess long term sustainability.
- Incentives must be developed for invasive species control and management of White tailed deer populations.
- Low impact development principles must be adopted to prevent further fragmentation of forest habitats.

Valuation methods are needed for carbon sequestration, invasive species control, and management activities tied to forest health improvement and the intrinsic societal values of forests including water quality protection.

Develop a Model Municipal Tree Ordinance

A model tree protection ordinance that provides protection of the water resource, maintain forest cover and regulate forest loss associated with land use change, while exempting forest management activities conducted in conformance with New Jersey’s Best Management Practices, will be developed by the Highlands Council. This ordinance will provide consistency in municipal regulation across the Region. The following standards should apply:

- Municipalities should adopt an ordinance which meets the intent of the Highlands RMP as far as exempting forest management activities conducted under a forest management plan approved by the State Forester.
- Ordinances should be consistent, to the extent possible, to provide equal protection of the resource throughout the Region.
- Ordinances should include methods to protect trees and forest cover during construction.
Develop Community Forestry Plans for Highlands Municipalities

Community Forestry Plans are used to maintain and improve forest cover in developed areas. Increased urban forest cover will improve storm water retention, water quality, air quality, community character and quality of life for residents of Highlands communities. They will be encouraged municipalities during Plan Conformance. Grants are currently available from the New Jersey Forest Service to fund a portion of these Plans.

Many Highlands municipalities are operating under tree deficits where they are removing more trees than are planted. In many communities the Community Forest resource is nearing the end of its life expectancy and replacement trees have not been planted in advance in anticipation of mass loss of the resource. Community Forestry Plans are adopted as components of Municipal Master Plans and address portions of these plans.

Develop Forest Conservation and Mitigation Plans

Forest Conservation and Mitigation Plan criteria would be developed by the Highlands Council and distributed to all municipalities for use in the site plan review process.

- Forest Conservation Plans would be completed to protect existing trees on development and redevelopment sites to maintain the maximum forest cover long term.
- Forest Mitigation Plans would be developed for all areas from which forests are cleared resulting in an alteration in land use (deforestation). Mitigation banks (planting focus areas) can be designated by municipalities and monitored by the Council. If a developer clears one acre of forest they can replant an acre of similar forest on-site, in the proximate area or within the HUC14 subwatershed, or contribute financially to a municipal or regional mitigation bank from which municipalities can apply to implement planting projects designated in Community Forestry Plans. Preference should be given to reforestation sites that will increase the size of core forests.

Develop Forest Stewardship Plans for Preserved Lands

Forest Stewardship Plans should be developed for all preserved lands within the Highlands. This includes non-profit, municipal, county and State owned lands. Stewardship of the lands will provide and optimize the multiple benefits and services forests provide including clean air, clean water, soil protection, recreation, wildlife habitat and forest products. There is currently a funding mechanism for Forest Stewardship Plans for non-profits but funding will run out at the end of 2007. A funding source for implementation should be developed including grants. Active management on preserved lands could reinvigorate the local forest product markets and create a critical mass for forest products industries to repopulate the Region.

“Green” or Third Party Certification for Highlands Forest Products

The Highlands Council will pursue as a long term goal the use of certification programs for Highlands forest products. Such programs would require that baseline data are collected, criteria and indicators established and Forest Stewardship Plans are completed on preserved land before products can be certified.

Restoration of Streams and Riparian Areas

Issue Overview

Streams transport floodwater, stormwater and suspended materials, support aquatic ecosystems, protect fish and wildlife habitat, and provide recreation opportunities and aesthetic beauty. Riparian areas moderate fluctuations in water...
temperature, help maintain ground water recharge and stream base flow, stabilize stream banks, and provide flood storage areas. During high flow or overland runoff events, riparian areas reduce erosion and sediment loads to surface water and remove excess nutrients and contaminants from flood water. Riparian areas also provide habitat for a variety of wildlife and support terrestrial and aquatic food webs through deposition of woody debris.

Stream and riparian area quality and function are influenced by intensity and type of land use. Anthropogenic disturbance to these systems disrupt the transport, storage, and quality of water that is critical to ecological functions. Land use change, increased impervious surfaces, and riparian vegetation removal decrease infiltration capacity within riparian areas, increase overland storm or flood water runoff, erode stream banks, alter stream profile, degrade water quality, alter stream flow regime, and damage aquatic fish and benthic communities.

The Highland Act requires that the Regional Management Plan protect, enhance, and restore the Region’s waters. To meet this goal, several RMP policies and objectives address the requirement for preventing disturbance to high quality systems, and for restoring the Region’s streams and riparian areas.

**Policy 1D4.** Highlands Open Waters shall include a protection buffer of 300 feet from the edge of the Highlands Open Water feature. All development shall comply with buffer standards which provide for the protection of Highlands Open Waters reviewed on a site-specific basis during local development review and Highlands Project Review.

**Objective 1D4f.** Implement a Stream Corridor Protection/Restoration plan and Low Impact Development Best Management Practices for any development activity proposed within a Highlands Open Water buffer.

**Policy 1D5.** Protect the integrity of the Riparian Areas through the application of RMP standards during local development review and Highlands Project Review.

**Objective 1D5b.** Limit alterations to existing natural vegetation or increases in impervious area within High and Moderate Integrity Riparian Areas to the minimum extent feasible in areas beyond the Highlands Open Water buffer requirements; protect the water quality of adjacent Highlands Open Water; and maintain or restore habitat value of the Riparian Area.

**Policy 1D6.** All development in a Protection Zone and Conservation Zone shall comply with standards to protect and enhance Highlands Open Waters and Riparian Areas through local development review and Highlands Project Review.

**Objective 1D6d.** Require identification and implementation of opportunities where the restoration and enhancement of previously impaired Highlands Open Waters or Riparian Areas are feasible and appropriate as mitigation to any allowable modification to Highlands Open Water or Riparian Area protection buffer requirements.

**Policy 1D7.** All development in an Existing Community Zone shall comply with standards which will protect and enhance Highlands Open Waters and Riparian Areas.

**Objective 1D7c.** Require identification and implementation of opportunities where the restoration and enhancement of previously impaired Highlands Open Waters or Riparian Areas are feasible and appropriate as mitigation to any allowable modification to Highlands Open Water or Riparian Area protection
### Program Summary

The Highlands Regional Master Plan focuses on several areas of action to address the need to protect, restore and enhance Highlands Open Waters and Riparian Areas. The Stream Restoration Program will promote consistent standards for the protection, restoration and acquisition of important waters and riparian areas of the Highlands Region. The program will include guidance for the restoration of degraded streams and riparian areas.

### Stream and Riparian Assessment

The Highlands Council guidance for assessing stream corridor and riparian area condition will provide a comprehensive methodology for utilization of a variety of structural, biological, hydrologic, and water quality components to value or “score” specific stream reaches and riparian areas. Assessed stream and riparian area value or “score” will dictate both the prioritization for preservation of lands draining to high quality streams and riparian areas and the extent and type of restoration required for impaired streams and riparian areas.

### Development of Stream Restoration Guidance

The Highlands Council will develop technical guidance for use by municipalities for the restoration of impaired streams. Highlands Council guidance for stream restoration may include goals and design guidelines for restoration of channel profile, flood control, sediment control, improved drainage, bank stabilization, improvement of aquatic habitat, and restoration of the ecological functions and processes of a stream and its adjacent riparian area and floodplain. Existing guidance manuals, *Stream Restoration Design*, developed by the Natural Resources Conservation Service, and *Stream Corridor Restoration*, developed by the Federal Interagency Stream Corridor Restoration Working Group, will be used as two examples for the Council’s work.

### Development of Riparian Restoration Guidance

The Highlands Council will develop or adapt technical guidance for use by municipalities for the restoration of impaired riparian areas. Highlands Council guidance for stream restoration may include goals and design guidelines for restoration of riparian vegetation, improvement of riparian wildlife habitat, increased riparian buffer width, reduction of impervious surface coverage, and restoration of the ecological functions and processes of a riparian area with its adjacent stream and upland terrestrial habitat. *Stream Corridor Restoration*, developed by the Federal Interagency Stream Corridor Restoration Working Group will be used as one example for the Council’s work.

### Implementation of Stream and Riparian Area Restoration Projects

The Highlands Council will encourage restoration of streams and riparian areas by public and private landowners, government agencies, non-profit organizations and other interested parties wherever feasible. Opportunities for restoration include, but are not limited to:

- Redevelopment projects in areas containing previously degraded streams and riparian areas;
- Transportation projects where restoration of previously degraded streams and riparian areas can be cost-effectively incorporated into the capital project;
- Implementation of Watershed Restoration Plans approved by the NJ...
Critical Habitat Conservation and Management

Issue Overview

Biodiversity is the variety of plant species, animal species, and all other organisms found in a particular environment and is a critical indicator of ecological viability. The protection of habitats that are critical to maintaining biodiversity contributes to the protection of rare, threatened, or endangered plant and animal species of the Highlands Region.

It is important that Highlands Region critical habitat be protected and, where disturbed, be restored in both quality and function. The Highland Act provides for the protection of the Region's critical habitat for fauna and flora. To meet this goal of the Act, several RMP policies and objectives address the requirement for protecting this resource element of the Highlands Region ecosystem.

RMP Policies and Objectives Addressed

Policy 1F1. To prohibit through Plan Conformance, local development review and Highlands Project Review the direct impact of new human development or expansion or increased intensity of existing development within Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools.

Policy 1F2. To assign land within Critical Wildlife Habitats, Significant Natural Areas, and within 1,000 feet of Vernal Pools a high priority for fee simple and/or easement acquisition. Policy 1F3. To promote the restoration and enhancement of impaired lands in Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools.

Policy 1F4. To establish a program for habitat conservation and management including minimum standards and criteria for the protection, enhancement, and restoration of lands within Critical Wildlife Habitats, Significant Natural Areas, and within 1,000 feet of Vernal Pools.

Objective 1F4a. Implementation of performance standards through local development review and Highlands Project Review requiring all development to employ low impact development best management practices and avoid disturbance of a critical habitat feature whenever possible and to promote avoidance and minimize impact when disturbance is unavoidable.

Objective 1F4b. Implementation of performance standards which require the mitigation of disturbed critical habitat.

Objective 1F4c. Implementation of performance standards for the enhancement or restoration of historically disturbed critical habitat.


Policy 1F5. To require that applications for any local development review and Highlands Project Review for lands within Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools be subject to minimum standards and criteria outlined in the Habitat Conservation and Management Plan.

Objective 1F5a. Prohibit alteration or disturbance of Critical Wildlife Habitat, Significant Natural Areas, and within 1,000 feet of Vernal Pools, except as
necessary to protect public health and safety, or to provide for minimum practical use of in the absence of any alternative.

**Objective 1F5b.** Require that any disturbance to a critical habitat feature include mitigation for all adverse modification and provide for no net loss of habitat value.

**Objective 1F5c.** Require conformance with any applicable Council-approved Habitat Conservation and Management Plan.

**Objective 1F5d.** A Vernal Pools buffer may be modified, decreasing vernal pool protection buffers, to the minimum decrease feasible, if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with NJDEP’s Endangered and Nongame Species Program, that:

- In an undisturbed wetland, the existing vernal pool-breeding wildlife require a smaller protective buffer;
- Existing land uses present a human, natural or development barrier to the migration or viability of vernal pool-breeding wildlife; or
- There is a need to protect public health and safety, or to provide for minimum practical use with required mitigation, (including a habitat protection buffer in addition to mitigation), in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council.

**Objective 1F5e.** A Critical Wildlife Habitat area or Significant Natural Area delineation may be modified if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with NJDEP’s Endangered and Nongame Species Program or Natural Heritage Program, that:

- The nature of the site is such that it does not provide habitat for species of concern;
- The species of concern are not present on the site during any critical part of their life cycle, nor depend upon the site for food, shelter or breeding;
- Existing land uses present a human, natural or development barrier to the use of the site by species of concern; or
- There is a need to protect public health and safety, or to provide for minimum practical use with required mitigation, (including a habitat protection buffer in addition to mitigation), in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council.

**Policy 1F6.** To prohibit through local development review and Highlands Project Review the indirect impact of any human development activity which would result in damage or destruction of habitat for rare, threatened, or endangered species of animal or plant.

**Objective 1F6a.** Prohibit the indirect impact of any activity that that is off-site, adjacent to, or within critical habitat that would result in the destruction or adverse modification of habitat for any rare, threatened, or endangered species of animal or plant.

**Policy 1F7.** To establish standards and procedures for the identification of lands where it is necessary that Critical Wildlife Areas, Significant Natural Areas, or Vernal Pool buffers be expanded in order to protect an individual species or ecological community in the event that it is determined that a larger area is required to protect the functional integrity of the habitat.
Policy 1F8. To establish standards and criteria for the identification of critical habitat features.

Policy 1G1. To require that conforming municipalities and counties identify Critical Habitat Areas and management programs in their master plans and development regulations.

Policy 1G2. To require that conforming municipalities and counties include approved Habitat Conservation and Management Plans in master plans and development regulations.

Program Summary

The RMP focuses on several areas of action to address the need to protect critical habitat. The Critical Habitat Conservation and Management Program will promote consistent standards for the protection, restoration and acquisition of the three categories of critical habitat in the Highlands Region: 1) Critical Wildlife Habitat (habitat for rare, threatened or endangered species); 2) Significant Natural Areas (regionally significant ecological communities); and 3) NJDEP-certified Vernal Pools (confined, ephemeral wet depressions that support distinctive [and often endangered] species that are specially adapted to periodic extremes in water pool levels).

Development of Municipal Conservation and Management Overlay District Ordinance

To protect the Highlands Region critical habitat, the Highlands Council will develop or adapt a conservation and management overlay district ordinance for use by municipalities for inclusion in municipal master plans. The purpose of the overlay district ordinance is to identify critical habitat within each municipality, highlighting: habitat in need of protection from fragmentation and other anthropogenic impacts; habitat critical to maintaining wildlife and plant populations; and habitat that serves other essential ecosystem functions such as carbon sequestration and ground water recharge.

Development of Critical Habitat Conservation and Management Guidance

The Highlands Council will develop or adapt technical guidance for habitat identified in the conservation and management overlay district to be used by municipalities for the inclusion and implementation of conservation and management of critical habitats in municipal master plans.

Highlands Council guidance for habitat conservation and management may include, but not be limited to, performance and design standards for development within or adjacent to critical habitat, restoration of the ecological functions and processes of impaired or disturbed critical habitat, procedures for modifications to vernal pool boundaries, prevention of habitat fragmentation through open space preservation, corporate, non-profit, and community involvement in creating, protecting, and restoring habitat. An existing guidance manual, Wildlife Action Plan, developed by NJDEP and information from the Wildlife Habitat Council will be used as examples for the Council’s work.

Ensuring Implementation of Critical Habitat Conservation and Management

Where a development project is proposed, a conforming municipality will require implementation of habitat conservation and management practices as a condition of local approval.

Implementation of Critical Habitat

The Highlands Council will encourage critical habitat conservation and management by public and private landowners, government agencies, non-profit
organizations and other interested parties wherever feasible. Opportunities for conservation, restoration and management include, but are not limited to:

- Redevelopment projects in areas containing previously degraded habitat;
- Development projects in areas within or adjacent to critical habitat;
- Stewardship projects of undeveloped land on large corporate campuses;
- Park development capital projects, where restoration of prior damage can be cost-effectively incorporated into the capital project;
- As components of Natural Resources Damage Assessment settlements.

Land Preservation

Issue Overview

Public and private investment in land preservation over the years has protected nearly a third of the Highlands Region as perpetual open space. Maintaining the land in a natural condition is necessary to preserve ecosystem integrity and protect drinking water supplies. The Highlands Act contemplates preservation of additional open space resources in order to protect and enhance ecosystem function, protect drinking water resources, and preserve natural and recreational lands.

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Highlands Region, including the natural and the built environment. Forests provide essential ecosystem functions, including surface water filtration, which is important to protecting essential drinking water supplies for the Highlands Region and for the state as a whole. Forests serve as habitat for plants and animals and are critically important to the maintenance of biodiversity in one of the most populous states in the nation. When managed for sustainable use, forests can be as source of renewable wood products. Forests are a defining visible and functional feature of the Highlands and constitute a majority of critical habitat in the Region.

Agriculture is another important part of the essential character of the Highlands Region’s culture, landscape, and economy. It provides important economic benefits to the Highlands Region in the form of agricultural production and agritourism, provides food to area residents using less energy than would be required to import produce from other regions and helps maintain the Highland’s rural character.

Programs specifically addressing Agriculture and Forestry as economic landscapes are outlined in the Sustainable Agriculture Program and the Forest Resource Management and Sustainability Program. This program addresses land preservation in the Highlands Region holistically.

RMP Policies and Objectives Addressed

Policy 1A1. To meet the goal for the Preservation Area to “preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state,” and to “protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests.”

Policy 1A2. To limit human development in the Forest Resource Area in the Preservation Area in order to protect and enhance forest resources, critical habitat and the quantity and quality of water resources.

Objective 1A2b. Implementation of regulations through Plan Conformance which limit permissible uses within the Forest Resource Area to maintenance of pre-existing uses and restoration of impaired forest areas, where relief from strict
adherence to these standards shall be permitted only upon approval of a forest

**Objective 1A2c.** To prohibit through local development review and Highlands Project Review the deforestation of lands within the Forest Resource Area of the Preservation Area for human development except where authorized as an exemption by the Highlands Act.

**Policy 1A3.** To promote the priority use of available funding to acquire forested lands within the Forest Resource Area.

**Policy 1A4.** To assign land within the Forest Resource Area a high priority for fee simple and easement acquisition. **Policy 1H1.** To identify and maintain an inventory of private and public open space land holdings and conservation easements in the Highlands Region.

**Objective 1H1a.** Create a coordinated and continually updated open space preservation data base of preserved lands and land stewardship activities by municipal, county, state and federal agencies, non-profit organizations and individuals.

**Policy 1H2.** To serve as a regional clearinghouse for information regarding funding sources for land acquisition, restoration and enhancement, and long-term stewardship of open space lands in the Highlands Region.

**Policy 1H3.** To provide assistance to land acquisition efforts of public and private organizations in order to maximize land preservation efforts in the Highlands Region.

**Objective 1H3a.** Creation of a 5 and 10 year priority list for lands which should be acquired in the Highlands Region.

**Objective 1H3b.** Creation of an open space preservation and land stewardship technical assistance program.

**Policy 1H4.** To identify and maintain an inventory of lands within Conservation Priority Areas which should be preserved as open space.

**Objective 1H4a.** Creation of a current list of lands which are 5 and 10 year priorities for land acquisition in the Highlands Region.

**Policy 1H5.** To promote the establishment of dedicated sources of funding for the preservation of open space lands in the Highlands Region.

**Objective 1H5a.** Establishment of dedicated sources of state revenue to be used for open space preservation in the Highlands Region, such as coordination with NJDEP Green Acres Program for re-authorization of the Garden State Preservation Trust Fund, including a dedicated fund for the anticipated land acquisition needs of the Highlands Region, and enactment of a water user fee.

**Objective 1H5b.** Establishment of dedicated sources of state revenue for a reserve fund to capitalize the Highlands Transfer of Development Rights Program.

**Objective 1H5c.** Establishment of an on-going program to secure significant federal funding in support of land acquisition and stewardship efforts in the Highlands Region including, but not limited to, additional appropriations under the Federal Highlands Conservation Act.

**Objective 1H5d.** Establishment of an on-going program to seek funding for land acquisition and stewardship from unique sources of funding such as federal
and state court-imposed fines for environmental damage, gifts, endowments and donations.

**Objective 1H5e.** Establishment of a dedicated source of revenue for the preservation and land stewardship of open space through a surcharge on public water supply system rates for any system that directly or indirectly relies on Highlands water resources for more than 5 percent of their annual needs.

**Policy 1H6.** To promote the acquisition and protection of open space resources within the Highlands Region under existing local and state open space preservation and land stewardship programs.

**Objective 1H6a.** Coordination of Highlands Region priority open space preservation and land stewardship activities with the NJDEP Green Acres Program and the State Agriculture Development Committee with regard to land acquisition and preservation priorities in the Highlands Region.

**Objective 1H6b.** Coordination with NJDEP regarding the review of applications for Green Acres diversions for consistency with the RMP.

**Policy 1H7.** To promote the creation of a Highlands Water Protection and Planning Trust Fund to secure monies from alternate sources of funding to assist in land acquisition and stewardship.

**Policy 1H8.** To encourage municipalities and counties to establish and fund local open space acquisition and land stewardship programs or to expand existing open space and land stewardship programs.

**Policy 1H9.** To support legislation to extend the dual appraisal methodology used by the Garden State Preservation Trust for lands in the Highlands Region beyond the June 30, 2009 expiration date to a minimum of five years beyond adoption of the RMP.

**Policy 1H10.** To promote and facilitate the formation of an interagency working group comprised of representatives of appropriate federal, state and county agencies for the purpose of coordinating open space acquisition activities, including identification of high priority lands for preservation, land stewardship initiatives, and funding needs.

**Policy 1H11.** To identify and designate one or more Special Environmental Areas in the Preservation Area and Planning Area where development should not occur in order to protect water resources and environmentally sensitive lands while recognizing the need to provide just compensation to the owners of those lands, when appropriate, through fee simple acquisition, easement acquisition, transfer of development rights programs or other means or strategies.

**Objective 1H11a.** Identification and designation of Special Environmental Areas which should not be developed in order to protect water resources and environmentally sensitive lands based upon RMP Conservation Priority Area rank and the potential to protect water supply reservoirs and other critical water features, create large contiguous areas of environmentally sensitive lands, create habitat corridors, and connect to existing preserved open space. Existing land use patterns shall be considered to minimize conflicts between the designation of Special Environmental Areas and ongoing land uses.

**Objective 1H11b.** Establishment of a process and criteria for Planning Area municipalities to petition the Highlands Council for designation of a Special Environmental Area within the municipality not otherwise identified and
designated by the Highlands Council.

**Objective 1H11c.** Adoption and enforcement of innovative development regulations which prohibit the development of those portions of a parcel of land which are located within a Special Environmental Area which should not be developed in order to protect water resources and environmentally sensitive lands and provide for the permanent preservation of such land areas.

**Objective 1H11d.** Establishment of a confidential process and criteria for listing any parcel or portions of a parcel of land located within a Special Environmental Area which should be protected through fee or easement acquisition by appropriate land preservation/acquisition agencies.

**Objective 1H11e.** Preparation and delivery of confidential documents to appropriate land preservation/acquisition agencies identifying parcels of land wholly within Special Environmental Areas, which should be protected through fee or easement acquisition based upon the size of the parcel, the intensity of critical areas within the parcel, and the ability of the parcel to interconnect preserved forested land, critical habitats or regionally significant scenic landscapes.

**Objective 1H11f.** Implementation of the Highlands Development Credit Program as a means of permanently preserving land in Special Environmental Areas.

**Objective 1H11g.** Creation of a landowner assistance program to provide owners of land which should not be developed in order to protect water resources and environmentally sensitive lands with technical assistance and guidance with regard to land preservation options and the Highlands Development Credit Program.

**Policy 1J1.** To promote the creation of a Forest Preservation Easement Program for the Highlands Region, which would be eligible for use through the State Agricultural Development Committee and the Green Acres Program.

**Objective 1J1a.** Achieve maximum preservation of working forests through the Forest Preservation Easement Program, including public access on lands preserved through the Green Acres Program.

**Policy 3A5.** To promote farmland preservation within the Agricultural Resource Areas and accord priority to the preservation of agricultural lands within Agricultural Priority Areas, through fee simple acquisition, less than fee acquisition, Transfer of Development Rights and other agricultural land conservation techniques.

**Policy 3A6.** To ensure through Plan Conformance, local development review and Highlands Project Review that land uses within an Agricultural Resource Area minimize conflict with or support sustainable agriculture, or are compatible with cluster development that preserves agricultural lands, and support the resource protection requirements of the RMP.

**Objective 3A6a.** Implementation of regulations which limit non-agricultural uses within an Agricultural Resource Area to those uses that support the preservation of farmland, the continued viability of the agricultural industry, or are compatible with cluster development that preserves agricultural lands, and support the resource protection requirements of the RMP.
### Program Summary

One of the fundamental aspects of the Highlands Act is the emphasis on land preservation to ensure that public funds and other resources are focused on protection of critical Highlands resources. In order to accomplish this purpose, the case for land preservation and critical issues surrounding preservation must be addressed by the Highlands Council. The Council must create the criteria for the identification of critical lands, the priorities for land preservation, implementation strategies for land preservation and stewardship, and a process to ensure that sufficient financial and institutional resources are available for land preservation and stewardship.

Successful land preservation requires four basic ingredients—targeting of land acquisition priorities based on a sound rationale, buyers with funding or other incentives, sellers willing to accept a buyer’s offer, and stewardship of the acquired open space. (Management of working farms and forests are addressed in the Sustainable Agriculture Program and Forest Resource Management and Sustainability Program.) Additionally, a federal, State, and county interagency working group will aid in coordinating land acquisition activities, identification of high priority lands, stewardship initiatives, and funding needs.

### Identification of Critical Lands

An important factor in protecting environmentally critical areas is identifying existing preserved lands in the Highlands Region and the resources that are already protected. A total of 274,675 acres of the Highlands Region are primarily preserved open space or preserved farmland in a combination of federal, State, county municipal, nonprofit and private ownership. These lands represent a diverse catalog of the public and private land and water areas available for recreation or presently protected as open space. Developing a comprehensive open space dataset throughout the Highlands Region is a highly complex undertaking. There are over a dozen agencies and organizations which contribute to open space identification and each has its own structure for recording open space data to meet its business model. Time, accuracy, precision and completeness differences all play a role in making the assemblage a difficult and imprecise product. The Highland Council has acquired available data and will work with all agencies and organizations who contribute to open space recordkeeping to develop a data standard which meets each agencies’ or organizations’ individual needs while at the same time improving open space inventories at a regional scale. The figure Conservation Priority Area displays the relative value of the important critical resources in order to provide a prioritization mechanism for the future land preservation activities in the Highlands Region.

### Establishment of Land Preservation Priorities and Special Areas

In order to protect the important critical resources of the Highlands Region, preservation of the lands in which these resources are located must be encouraged and funded. However, since funds are not limitless, the resource values of lands must be known to rank them in terms of their importance and long-term viability. In order to determine high priority areas in the Highlands Region for preservation, the Council will use the results of the Resource Assessment to identify and prioritize those lands within the Highlands Region which have the highest water and ecological resource values. These values are based on a combination of indicators using methodologies discussed elsewhere in the RMP which measure the quantity and quality of regional resources such as: watershed conditions, open waters, riparian areas, prime ground water recharge areas, forests, critical habitat, and steep slopes. Moreover, existing protected...
Legend

Conservation Priority
- Moderate
- High
- Open Space

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Conservation Priority Area

Sources:
New Jersey Highlands Council, 2007
lands, showing the historic pattern of land preservation activities in the Region, will be identified and integrated with the ecological resource value to identify priority areas for conservation. This prioritization process will enable the Council to identify Special Environmental Areas in the Preservation and Planning Areas to respond to Sections 6.n, 6.o, 6.q and 12.a of the Highlands Act, which are areas that should not be developed due to their importance for water resource and ecological protection. The Highlands Council will use its identification of Conservation Priority Areas and other data to identify Special Environmental Areas, and will also provide for municipal petitions in the Planning Area to designate such areas.

Implementation of Strategies for Land Preservation by Maximizing Current Land Preservation Funding Programs

One of the fundamental aspects of the Highlands Act is the emphasis on land preservation to ensure that public funds and other resources are focused on protection of critical Highlands resources. The *Land Preservation and Stewardship Technical Report* identifies 10 federal, State, county, municipal, and nonprofit land preservation funding programs. The Highlands Council will collaborate and coordinate with agencies (in particular the NJDEP Green Acres Program, the NJ Department of Agriculture, and State Agriculture Development Committee), local governments, and local organizations to target and preserve natural and agricultural spaces in support of the RMP.

Implementation of Strategies for Land Stewardship by Maximizing Current Land Stewardship Funding Programs

The *Land Preservation and Stewardship Technical Report* also identifies 23 federal, State, county, municipal, and nonprofit conservation and stewardship funding programs. The Highlands Council will collaborate and coordinate with agencies (in particular the NJDEP Green Acres Program, the NJ Department of Agriculture, and State Agriculture Development Committee), governments, and local organizations to properly manage the preserved natural and agricultural spaces in support of the RMP. This effort is necessary to ensure that the natural resources targeted for acquisition are not later lost through insufficient stewardship.

Establishment of Alternative/New Land Preservation Programs

The Green Acres Program secures lands for recreation and conservation purposes while the State Agriculture Development Committee’s (SADC) Farmland Preservation Program acquires the development rights on privately owned farmland. Consequently, the existing programs do not capture certain important resources in the Highlands Region and steps need to be taken to fill these gaps. For example, the SADC preserves farmland through the purchase of development easements. One criterion for prioritizing farmland is the percentage of land in crop production. As a result, a farm that is heavily forested may not be considered a priority for preservation by the SADC. Additionally, lots that are entirely forested with woodland management plans and are farmland assessed are not considered farms for purposes of SADC preservation. The Green Acres Program is primarily based upon the purchasing of property in fee rather than be easement. The Highlands Council will collaborate with NJDEP and SADC to develop an adequate method to preserve forested lands through easements to allow them to remain in private ownership and properly maintained through woodland management, in addition to the Transfer of Development Rights mechanism established through the Highlands Act. Given the fact that the Highlands Region is over 50% forested and maintaining forest land is important to protecting water quality, a program specifically for purchasing forest land easements should be available.
### Establishment of Alternative/New Stewardship Programs

For long-term sustainability of the natural and agriculture resources in the Highlands Region, there must be proactive management of deer populations and other non-native species, reduction in the rate of forest fragmentation and the creation of incentives for landowners to retain property in its natural or agricultural state. The Highlands Council will collaborate with the NJDEP and the NJDA to develop these management techniques and incentives. Additionally, intrinsic values for forests and agriculture (including water quality and water supply protection) should be established to enhance the justification for preservation of such lands.

### Development of Open Space/Conservation Design Standards

Not all lands that are considered critical can be preserved because of limited funds and other factors. As a result, techniques and systems that enable limited growth and the preservation of open lands are needed. The Highlands Council will develop Open Space/Conservation Design development layout standards that support the RMP and which take advantage of, but are not limited to, techniques such as clustering and lot-size averaging.

### Identification of Willing Sellers

The Garden State Preservation Trust legislation requires that direct acquisitions by Green Acres and the State Agricultural Development Committee be from willing sellers. The Highlands Council will develop an outreach and education program for Highlands landowners to help them take advantage of funding opportunities and incentives available for land preservation.

### Establishment of a Land Preservation and Stewardship Technical Assistance Program

The Highlands Council will establish a technical assistance program for land preservation and stewardship. For example, 28 Highlands municipalities do not have open space trust funds and the municipalities and counties that do may not be maximizing their potential; the Council can provide assistance in creating or amending their open space trust funds. Additionally, land acquisition by fee purchase or by easement is a major tool to protect natural resources and agricultural lands. Guaranteeing that these resources remain intact and viable is an overarching responsibility of the preserved landowner and easement holder. The Highlands Council will establish a program to aid in the development of federal, State, municipal, nonprofit, and individual stewardship plans which will include, but not be limited to, baseline documentation, monitoring, landowner/user relations, and enforcement.

### Establishment of Dedicated Sources of Funding for Land Preservation and Stewardship in the Highlands Region

The Highlands Council supports a dedicated, directed, and stable source of acquisition and stewardship funding. Additionally, the Council supports the reauthorization of the Garden State Preservation Trust Fund and efforts to create a statutory funding mechanism for water quality and watershed land acquisitions. In recognition of this support, the Highlands Council will explore, in addition to existing funding sources, securing other stable, dedicated sources of funding such as:

- a reserve fund to capitalize the Highlands TDR Program;
- a Highlands water user fee; and
- a surcharge on public water supply systems rates that use Highlands water.

### Carbonate Rock (Karst) Topography

**Issue Overview**

Karst is a type of land surface, or topography, that is formed at the surface of carbonate rock formations when water dissolves the rock over time. This
process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams and sinkholes direct surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. Stormwater basins, septic system leaching fields and sewers may also contribute contaminants directly to ground water through karst features. In addition to ground water concerns, communities in karst areas must contend with safety concerns as sinkholes can have damaging effects to large manmade objects. The Highlands Region has several large areas with carbonate rock formations, usually river valleys such as the Musconetcong, South Branch Raritan and Lamington, and karst features exist in some – but not all – of these areas.

<table>
<thead>
<tr>
<th>RMP Policies and Objectives Addressed</th>
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<tbody>
<tr>
<td><strong>Policy 1K1.</strong> To map areas of the Highlands Region that are underlain by carbonate rocks to define a Carbonate Rock Area.</td>
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<tr>
<td><strong>Policy 1K2.</strong> To identify and delineate through local development review and Highlands Project Review land areas that drain surface water into the Carbonate Rock Area, as changes in the quantity, quality and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area.</td>
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<td><strong>Policy 1K3.</strong> To establish and maintain an inventory of karst features in the Highlands Region.</td>
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<td><strong>Policy 1K4.</strong> To ensure through Plan Conformance that municipalities in, or draining to, the Carbonate Rock Area protect public health and safety and the quality of ground waters from inappropriate land uses and pollutant discharges.</td>
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<td><strong>Objective 1K4a.</strong> Identification of critical requirements for development review ordinances to be adopted by municipalities, and for county development review procedures regarding roads and stormwater systems at a minimum, with technical guidance.</td>
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<td><strong>Objective 1K4b.</strong> Applications for site plan or subdivision approval will include a multi-phased geotechnical site investigation (e.g., test borings, test pits, etc.) to locate any potential karst features and potential hazards to public health and safety, structures and ground water quality.</td>
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<tr>
<td><strong>Objective 1K4c.</strong> Local development reviews and Highlands Project Reviews and requirements shall ensure that all potential hazards to public health and safety, structures and ground water quality are fully addressed and mitigated in the construction plans and subsequent approval process, with the maximum emphasis on nonstructural measures, including, but not limited to, avoidance of modifications to the karst features.</td>
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<td><strong>Objective 1K4d.</strong> Public works projects, including but not limited to water supply, sewerage, stormwater and transportation facilities, shall be constructed and maintained such that the potential for damage from karst features and the contamination of ground water are avoided.</td>
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<th>Program Summary</th>
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<td>Implementation of a Carbonate Rock Program is necessary to address the potential problems that are common to karst areas. The program is not intended to restrict development yields, but rather to provide for the adoption of a site assessment and design process for karst areas that allows applicants, municipalities, and the Council to identify any karst concerns at a site and to incorporate appropriate design features in order to minimize future sinkhole (or</td>
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The Highlands Council has utilized existing New Jersey Geologic Survey and United States Geological Survey data to map those areas of the Highlands Region that are underlain by carbonate rocks. These areas collectively are referred to as the Carbonate Rock Area. Since changes in the quantity, quality, and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area, lands that drain surface water into the Area will be delineated by the Council using LiDAR topographic analyses or other topographic data where LiDAR data are not available. Development ordinances will be adopted by municipalities within affected land areas that will serve to protect public health and safety from potential hazards common to karst areas.

### Identification of Critical Requirements for Development Ordinances

The Highlands Council will identify critical requirements for development ordinances to be adopted by municipalities that have land areas that are within or drain to the Carbonate Rock Area. Given that the best design solution to karst-related problems is dependant upon the actual subsurface conditions below a particular area, the preparation of one-design-fits-all-requirements for the Region is not appropriate. Performance standards provide flexibility regarding the specific actions to be taken to achieve local goals. Municipalities will adopt development ordinances and performance standards that are consistent with the critical requirements identified by the Council.

### Development of Carbonate Rock Area Guidance Manual

The Highlands Council will develop a technical guidance manual for use by municipalities that have land areas that are within or drain to the Carbonate Rock Area. The guidance will contain requirements for a multi-phased geotechnical study to locate any potential karst features and potential hazards to public health and safety, structures, and ground water quality. The required multi-stage investigation will allow the applicant, as well as the municipality and Council, to predict problems and to estimate the associated costs based upon a growing body of knowledge for the area in question. The initial phase of work will be accomplished relatively inexpensively, yet the applicant can develop preliminary costs and evaluate the feasibility of the development along with the municipality and the Council. An existing guidance manual, developed by the North Jersey Resource Conservation & Development Council, will be used as one basis for the Council’s work. The Council will also provide guidance to municipalities regarding development of strategies with respect to public works projects in lands that are within or drain to the Carbonate Rock Area.

### Establishment and Maintenance of Karst Inventory

The Highlands Council, working with municipalities during the site plan and subdivision approval process, will establish and maintain an inventory of karst features that are found in the Highlands Region.

### Lake Management Area

#### Issue Overview

The RMP provides for the protection and enhancement of Highlands Lakes and their environs, including Highlands lake communities. Overbuilt, damaged and poorly managed shoreland areas can result in the degradation of water quality, harm to the lake ecosystem, the decrease of natural aesthetic values, and the overall loss of property values for lake communities. Lakes can be harmed by...
Most existing lake communities were built out prior to modern environmental requirements. Some have sewer systems, but many rely on septic systems (or even cesspools) on inadequately sized lots. Studies indicate that nearly every public lake (privately-owned lakes were not evaluated) in the Highlands is experiencing contamination, often including excessive bacteria and nutrients. Many lake communities have been experiencing intensifying land uses as the original buildings are torn down and replaced by larger structures. The Council seeks to identify redevelopment opportunities to improve community character and value, to both protect natural resources and to enhance and restore the quality of lake environments in the Region.

RMP Policies and Objectives Addressed

Policy 1L1. To establish tiers of lake management appropriate to management strategies that help protect lake water quality and community value from the impacts of present and future development.

Objective 1L1a. Lake management programs shall use the following management tiers around Highlands Region lakes of greater than 10 acres in size:

- A shoreland protection tier consisting of an area measured 300-foot perpendicular from the shoreline of the lake;
- A water quality management tier consisting of an area measured 1,000-foot perpendicular from the shoreline of the lake, but outside of the shoreland protection tier;
- A scenic resources tier consisting of an area measured 300 to 1,000-foot perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances;
- A lake watershed tier consisting of the entire land area draining to the lake, through the evaluation of drainage areas using LiDAR topographic analyses or other topographic data where LiDAR data are not available.

Policy 1L2. To establish and implement management strategies to help protect lake water quality and ecosystem values from the impacts of present and future development for all lakes.

Objective 1L2a. Implementation of standards through local development review and Highlands Project Review regarding lake ecosystem and water quality in the shoreland protection tier to address direct and proximate impacts upon the lake, including but not limited to shoreline modification and development (including limits to the hardscaping of shorelines using bulkheads, rip-rap and walls), docks, piers, boathouses, dredging, vegetation removal, and increased impervious cover. Pollutant discharges shall also be addressed, including the potential for contamination from septic systems, cesspools and other wastewater management systems within the tier that are failing or are inadequately designed and constructed. As such systems fail, landowners should be required to provide upgraded treatment to minimize pollutant movement to the lake.

Objective 1L2b. Implementation of standards through local development review and Highlands Project Review regarding land use compatibility and water quality in the water quality management tier, to prevent or minimize continuous pollutant sources that can contribute pollutants overland or through ground water to the lake from greater distances than the shoreland protection tier.
Objective 1L2c. Implementation of standards through local development review and Highlands Project Review regarding the protection of visual and scenic resources in the scenic resources tier, including but limited to requirements for vegetative screening of buildings, building height limitations, and limits on tree and understory removal for reasons other than public health and safety or as the minimum necessary to make reasonable use of the designated building envelope for the parcel proposed for development.

Objective 1L2d. Implementation of lake restoration plans to restore, protect and, where possible, enhance lake water quality through management of pollutant sources in the lake watershed tier, including but not limited to the development, adoption and implementation of TMDLs by NJDEP pursuant to the Water Quality Management Planning Rules, N.J.A.C. 7:15.

Policy 1L3. To require that conforming municipalities adopt and implement for all lakes the standards applicable to the shoreland protection and water quality management tiers; the standards applicable to the scenic resources tier shall be adopted and implemented for all public lakes (i.e., with shorelines that are not entirely privately-held and managed through a lake association), and for privately-held lakes to the extent feasible under law, recognizing the existence of previously approved lake community development plans.

Objective 1L3a. Shoreland protection and water quality management tier requirements shall apply to all new development, regardless of lake ownership.

Objective 1L3b. Scenic resource tier requirements shall apply to all lakes with public access and to lakes with no public access that are not entirely managed by a single homeowner or lake community association. For lakes that are privately-held and managed by a single homeowner or lake community association, the scenic resource tier requirements shall be voluntary.

Policy 1L4. To require that conforming municipalities develop and adopt lake restoration plans, with sufficient input from lake community residents and landowners, for each of the municipality’s developed lakes that has been identified as water quality impaired, to include watershed delineation, description of point and nonpoint sources of pollution in the watershed, lake monitoring schedules, existing and proposed in-lake management techniques, and recommended watershed best management practices. TMDLs adopted by the NJDEP to address known pollution problems may be used as lake restoration plans. For lakes that are privately-held and managed by a single homeowners or lake community association, the municipality may require that the association share in or assume the costs of developing such plans.

Objective 1L4a. Provide Lake Management Plan guidance to municipalities that includes watershed delineation mapping methodology, point and nonpoint source pollution references, example lake monitoring schedule with monitoring goals and methods, existing successful in-lake management techniques, and best management practices.

Objective 1L4b. Septic systems and cesspools on small lots in close proximity to lakes shall be replaced with upgraded individual treatment systems, communal septic systems or community-based wastewater systems wherever feasible and cost-effective. Community-based systems should not provide for additional land development capacity except for exempt lots within that existing lake community that are not environmentally constrained, or for areas that are otherwise permitted to have wastewater service under the goals, policies and objectives in
Part 2, Subpart d, Sustainable Development and Water Resources.

**Policy 1M1.** To provide guidance regarding evaluation of and standards for lake character and aesthetics that shall be adopted by municipal ordinance for application to public lakes, or that may be voluntarily adopted by privately-owned lake communities within their by-laws and regulations.

**Policy 1M2.** To encourage increased public access to publicly-owned lakes, within the lake’s carrying capacity and while maintaining the lake character.

**Policy 1M3.** To discourage or control teardowns that result in altered lake community character, and to encourage community-supported limitations in lot coverage and building height for new construction.

**Policy 1M4.** To establish and implement performance and development standards through local development review and Highlands Project Review for shoreline uses which achieve compatibility among shoreline activities and nearby neighborhoods.

**Policy 1M5.** To encourage municipalities to utilize recreational sites as opportunities to educate the public to the ecological value of lake environs.

**Policy 1M6.** To encourage municipalities to explore appropriate means to provide public recreation at the shoreline and on the water while ensuring retention of opportunities for passive recreation (e.g., natural areas, open space).

**Policy 1N1.** To develop innovative financing and administrative mechanisms for the maintenance and operation of public and private dams and lakes, where those dams and lakes provide a continuing public or private purpose.

**Policy 1N2.** To restore appropriate habitats in the lake beds and to prevent, mitigate or restore downstream habitats from damages due to lake drainage, when dams are allowed to fail or are deliberately breached or removed.

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Program Summary

This program seeks to protect, restore and enhance the water quality of Highlands lakes and to protect the unique character of Highlands lake communities. It facilitates land use and water resource planning on the basis of lake management tiers:

- A **Shoreline Protection Tier** comprised of all land within 300 feet of the shoreline of a Highlands Lake
- A **Water Quality Management Tier** comprised of land within 1,000 feet of the shoreline of a Highlands Lake
- A **Scenic Resources Tier** consisting of an area measured 300 to 1,000 feet from the shoreline, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances
- A **Lake Watershed Tier** consisting of the drainage area of a Highlands Lake as determined through the use of LiDAR topographic or other topographic data where LiDAR is not available, within which actions will be focused on the restoration of lake water quality, including activities under the Water Quality Restoration Program.

The program also includes a lake and dam protection and enhancement component and a homeowner’s educational brochure and awards program component.
**Shoreland Protection Tier**

The Highlands Council will establish standards regarding lake ecosystem and water quality in the shoreland protection tier to address direct and proximate impacts upon the lake. Such standards include, but are not limited to, the following:

1. Alteration of the shorelines shall be limited to the minimum disturbance necessary to provide for water dependent recreational uses such as beaches, docks and boat houses, generally limited to 10% or 25 feet of the shoreline of any parcel proposed for development, but subject to modification to limitations more appropriate to specific lakes.
2. Where there is little or no wave action, reeds and other wetland species that are below the high water mark shall be preserved or restored.
3. Existing shoreland vegetation within 50 feet of the shoreline shall be protected and preserved except for a minimum area permitted, established through municipal development regulations, for water dependent recreational facilities. Limitations should be more stringent for the first 25 feet. Restoration of native vegetation shall be required where development is proposed on property with existing disturbed areas within 25 feet of the shoreline.
4. No new structure other than water dependent recreational facilities shall be constructed within fifty (50) feet of the shoreline;
5. The width and length of piers and docks shall be controlled in municipal development regulations to achieve the minimum disturbance of shoreline, shoreline vegetation and wetlands vegetation possible with due consideration to safety, including provisions for piers and docks held in common to reduce the total number of new docks and piers.
6. Boat lifts, where used, shall be encouraged as a means of providing more light to the waters below and shall elevate boats a minimum of one foot above high water.

Development adjacent to Highlands lakes, which are Highlands Open Waters, shall include a protection buffer of 300 feet from the edge of the Highlands Open Water feature, or a lesser buffer if allowed based on RMP policies, and all development shall comply with buffer standards which provide for the protection of Highlands Open Waters.

**Water Quality Management Tier**

The Highlands Council will establish standards regarding land use compatibility and water quality in the water quality management tier to prevent or reduce continuous pollutant sources that can contribute pollutants overland or through ground water to the lake from greater distances than the shoreland protection tier. Such standards include, but are not limited to, the following:

1. All parcels of land proposed for development shall be improved with landscape or garden elements which retain storm water.
2. Runoff from roofs, driveways and patios shall be directed into landscape or garden elements which retain and filter storm water, or to infiltration practices.
3. Green roofs are strongly encouraged to clean and slow the release of storm water.
4. To the extent possible, impervious surfaces should drain away from the shoreline.
5. Storm water should be directed to a stormwater management train that cleans and reduces the rate of runoff.
6. The stormwater management train should maximize the use of swales with natural vegetation or constructed wetlands and discharge through a constructed wetland or other channel that maximizes aeration and cleaning of the water.

7. The stormwater improvements shall be designed in accordance with NJDEP regulations at N.J.A.C. 7:8 or the municipal stormwater management ordinance where more stringent.

8. Where sufficient land is available, natural swales, constructed wetlands, and other stormwater facilities shall be used.

9. To the extent possible, landscape or garden elements which retain stormwater shall be designed so that during larger storms, the water is released primarily through overland sheet flow across a vegetated, naturally landscaped area.

10. The discharge of stormwater shall, wherever feasible, be through sheet flow which may require the construction of an outlet that disperses the water over a substantial distance at a constant elevation so that water sheet flows over the top.

11. Septic systems within the Lake Management Zone must comply with the septic system density requirements, for the particular Land Use Capability Zone, with septic systems no closer to the lake than the Highlands Open Water Buffer or 100 feet, whichever is greater; clustering shall be permitted where it results in a greater buffer between the lake and the septic systems than would be feasible without clustering.

12. Community wastewater treatments will service parcels of lands within the Lake Management Zone wherever feasible in order to eliminate pollution of Highlands Lakes by discharges from septic systems.

The Highlands Council will work with other State agencies and counties to create a Highlands Storm Water Management Improvement Program comprised of:

1. A grant program in support of studies of existing stormwater systems by Highlands communities with regard to existing capacity.

2. A Bibliography of stormwater management literature related to retrofitting stormwater management systems to reduce runoff and improve the quality of runoff. The Bibliography shall include information with regard to the use of landscape installation and maintenance to reduce pollutants.

3. A Highlands Council awards program in conjunction with Highlands municipalities to encourage land owners to participate in stormwater system remediation.

### Implementation of Lake Restoration Plans

The Highlands Council will encourage municipalities to implement lake restoration plans to restore, protect and, where possible, enhance lake water quality through management of pollutant sources in the lake watershed (see also the Water Quality Restoration Program). The restoration plan will include, but not be limited to the following elements:

1. Delineation of the lake’s watershed.

2. Description of point and nonpoint pollution sources in the watershed.

3. Lake monitoring schedules.

4. In-lake management techniques.

5. TMDLs adopted by the NJDEP to address known pollution problems.

### Scenic Resources Tier

The Highlands Council will establish standards regarding the protection of visual and scenic resources in the Scenic Resources Tier from development or
redevelopment that include, but are not limited to, the following:

1. Building heights should be limited so that the top of a building does not exceed thirty (35) feet except in Designated Centers where a greater height is in keeping with existing community design.
2. All buildings shall be screened from view from lake by trees and other natural plant material.
3. The exteriors of all new or redeveloped buildings shall be finished with materials which are compatible with a natural or historical character of the Highlands Region.
4. New buildings shall be prohibited within areas which are Severely Constrained Slopes and Moderately Constrained Slopes.
5. Clearing of trees should be limited to the minimum area needed for the footprint of a building.
6. Outdoor lighting should be provided by cut-off fixtures and be directed away from the shoreline.

### Lake and Dam Management

The Highlands Council will implement measures to encourage the maintenance of public and private lakes and the restoration of lake beds and downstream areas when lakes are drained. Such measures may include, but are not limited to, the following:

1. Creation of Highlands Financing and Administrative Handbook for dam and lake maintenance and operation addressing creative public and private financing programs as appropriate for the lake or dam ownership.
3. Preparation of a Best Practices Manual for dam removal, including the protection of downstream resources from the migration of sediments and other pollutants, and the establishment of stable terrestrial or wetland ecosystems in former lake beds.
4. Provision of grants in aid to establish demonstration model dam and lake programs for publicly owned dams.

### Education and Awards Program

The Highlands Council will develop a Lakes Landscape Handbook and awards program for waterfront restoration and environmentally friendly landscaping.

In both the 300-foot and 1,000-foot tiers, landscaping and yard maintenance can make a contribution to improving lake quality. The handbook will focus on how-to material for landowners to illustrate how they can replace lawns and restore beach areas to a natural condition that is attractive and enhances the property value. Having an awards program that recognizes environmentally sensitive restoration will be an incentive for people to undertake these projects and advertise for the program.

The Highlands Council will coordinate with NJDEP, the landscape professional and hardware and garden centers to promote the use of fertilizers for lawn usage that do not contain phosphorous. Ideally, the sellers will not carry the lawn products that contain phosphorous, thus making unwitting usage very difficult. These sellers can also promote wise waterfront landscaping and maintenance.
Highlands Final Draft Regional Master Plan

Part 2. Water Resources and Water Utilities

Highlands Restoration: Water Deficits

Issue Overview

Sustaining the Highlands Region’s water resources is a matter of statewide importance. Increases in human population and changes in land use threaten those water resources by contributing to over-withdrawal of ground water and surface water systems, and a reduction of recharge rates. Human demand for water, generated by growth, results in depleted aquifers, reduced base flows in streams and reduced safe yields of reservoirs. The protection of base flow is critical to maintaining viable aquatic ecosystems and protecting potable water supplies, particularly during periods of drought. Recent droughts, which resulted in historically low stream flows and rapid depletion of reservoir capacity, provide clear evidence that water resources of the Highlands, while large in scale, are also nearing or beyond their capacity. The lapse of four decades since the drought of record hampers public understanding of what would happen during another severe drought.

The northern population centers of the state and the Highlands Region itself rely on surface water reservoirs and ground water aquifers, both of which are replenished by waters originating in the Highlands. Given these demands on Highlands water resources, there is a fundamental need to ensure adequate water supplies within the Region and outside the Region while also protecting its important ecological and riparian integrity.

Where water supplies are being stressed, management strategies are necessary to reduce and where feasible eliminate deficits, and to ensure that supplies are not depleted further. These strategies should also endeavor, wherever possible, to mitigate existing water demands and ensure that future demands are only granted upon the condition of reduction of water deficits.

RMP Policies and Objectives Addressed

Policy 2B4. To require through Plan Conformance the development and implementation of Water Management Plans to address any Current Deficit Areas or subwatershed that could become deficit areas based on projected development and water uses, to ensure sustainable water supply, water resource and ecological values.

Objective 2B4a. Water Management Plans shall include provisions to reduce consumptive and depletive uses of ground and surface waters as necessary to reduce or prevent deficits in Net Water Availability; or to ensure continued stream flows to downstream Current Deficit Areas from Existing Constrained Areas, to the extent practicable within each zone.

Objective 2B4b. Proposed increases in water use, including consumptive or depletive water uses, within a Current Deficit Area or an area where the proposed increase would cause the HUC14 subwatershed to become a Current Deficit Area shall provide mitigation equal to 125% of the proposed new consumptive or depletive water uses within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means.

Objective 2B4c. All water users within a Current Deficit Area or Existing Constrained Area shall seek funding and opportunities to prevent exacerbation of
and help reduce or eliminate existing deficits to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

Program Summary

In order to address the requirements and goals of the Highlands Act, the Highlands Council conducted a net water availability analysis, at a HUC14 subwatershed level, to determine the amount of water required to protect aquatic ecological integrity and the amount that is “available” for consumptive and depletive uses. This analysis is at a more local scale than used by the NJ Department of Environmental Protection for its Statewide Water Supply Plan (i.e., HUC11 watersheds), as the Highlands Council is addressing a much smaller area. NJDEP intends to incorporate the Highlands Region analysis in its work to the maximum extent feasible. It also uses more stringent constraints on human water uses, in furtherance of Highlands Act requirements for the protection of the Region’s water resources and aquatic ecosystems.

Consumptive and depletive uses are those uses that are not returned to the subwatershed by a discharge back into ground or a stream. They represent a hydrologic “loss” to the system with a corresponding reduction in base flows. The analysis compared these consumptive and depletive demand patterns against water availability to see where water resources are being exceeded.

Where a subwatershed’s water use was determined to exceed its availability, it was deemed to be in deficit. The Goals, Policies, and Objectives of the RMP restrict additional consumptive and depletive uses from that subwatershed so that the deficit is not exacerbated. The RMP also mandates that municipalities, utilities, and other interested stakeholders develop a Water Management Plan. The primary purpose of a Water Management Plan is to reduce and where feasible eliminate deficits; the plan can identify appropriate management strategies that can help ameliorate such water deficits or potential impacts on water supply source areas.

The Highlands restoration water deficit program consists of five discrete tasks:

1. Identify HUC14 subwatersheds that have a deficit of water availability;
2. Verify the net water availability analysis and its associated deficits.
3. Require, as a condition of conformance, development of a Water Management Plan for those municipalities or stakeholders whose water supply is located in a deficit subwatershed.
4. For complex systems or where the development of deficit reduction plans for multiple subwatersheds is more appropriate, collaborate with NJDEP and affected interests to develop Water Management Plans at a larger scale.
5. Coordination with NJDEP so that water allocation permits support the reduction and elimination of water deficits.

Analysis of Net Water Availability

The Highlands Council conducted a net water availability analysis in the RMP to assess the sustainability of Highlands water resources. Reservoir supplies with approved safe yields were assessed separate from ground water and other surface water supplies, as reservoirs provide storage against drought conditions and therefore are effective in a significantly different manner than other resources.

The net water availability analysis was conducted using hydrologic data and annual water use and withdrawal data ranging from years 2000-2005. The data were gathered primarily from NJDEP databases, with some instances of local input. However, much of the information regarding water supply utilities, their
service areas, and zone usage rates exists as local knowledge. Enhancing the data in the availability analysis will be a critical component of the water deficit program to ensure the sustainability of water resources.

The net water availability analysis is described in the RMP’s Water Resources Technical Report. In summary, the analysis consists of the following basic steps:

1. Estimate the ground water capacity within each HUC14 subwatershed of the Highlands Region;
2. Determine the threshold percentage of the ground water capacity is necessary to protect aquatic resource integrity and preserve water supply. The thresholds are more stringent in the Protection Zone and least stringent in the Existing Community Zone, but even in the latter case is somewhat more stringent than the NJDEP statewide threshold. Each threshold is multiplied by the ground water capacity; the product is called ground water availability.
3. Compare existing water uses and their associated consumptive/depletive volumes against the ground water availability. The difference is called net water availability; where consumptive and depletive water exceed the available water resources, those subwatersheds are deemed in deficit.

Net water availability has been calculated for all 183 HUC14 subwatersheds of the Highlands Region and 110 of these subwatersheds are in deficit based on the RMP thresholds.

### Verification of Net Water Availability

The Highlands Council shall continually update and verify the data utilized in its capacity assessments. Through the conformance process with municipalities and counties, the Council will obtain local-scale information about water use and water supply from local governments and utilities. The Council will also utilize new annual demand data, as the information is reported and available from a variety of sources.

As a more refined understanding of regional and local water resources is developed, the Council will be able to update and verify the net water availability analysis. This process will allow the Council to validate its analytical tools and determine whether initial estimates are correct. Utilizing this information, the Council can evaluate whether each subwatershed is correctly assessed and reevaluate its status as necessary.

Following confirmation of deficit status, the Highlands Council will continue to monitor deficit areas for two purposes:

- To ensure that future demand patterns are representative of previous annual data and not exacerbating deficits; and
- To evaluate the effectiveness of mitigation measures defined in Water Management Plans.

### Strategic Approaches to Mitigating Water Deficits

Where water deficits within a subwatershed are identified and validated, affected stakeholders should develop a strategic approach to addressing these shortages. These stakeholders will most often consist of municipalities, but may also include water supply utilities, wastewater systems, surrounding municipalities, and counties. Any proposed measures should be prioritized upon feasibility, effectiveness, environmental benefits, and funding issues.

Municipal conformance shall include consideration of the availability and viability of water supplies for future development. They should not assume that water will be available, absent a clear demonstration within a Water Management Plan.
Stakeholders shall give highest priority to water use efficiency and ground water recharge enhancements within the deficit subwatershed, then to the development of new internal water supplies, and finally to the development of water resources from areas which are not in deficit. Water use efficiency and conservation are discussed further by a related RMP program (see Water Use Efficiency Program). All of these strategies must be detailed and implemented as appropriate and feasible through a Water Management Plan.

Municipalities can rely upon numerous tools for planning at the local level: municipal and county master plans, the State Development and Redevelopment Plan, and wastewater management plans (WMPs).

Wastewater management plans require examination of current and future growth patterns to ensure that growth does not exceed the assimilative capacity of surface and ground waters for wastewater treatment. The intent, as with other sound planning practices, is to ensure that carrying capacity and land use are properly integrated. Similar in concept to a WMP, a Water Management Plan is envisioned as a planning tool for using municipal and utility data to update and verify water availability models, deficit mitigation methods, and implementation alternatives.

Municipalities supplied by, or withdrawing from deficit areas shall, as a requirement of conformance, be required to implement a Water Management Plan. The Regional Master Plan calls for the Water Management Plan to develop mitigation and restoration strategies as discussed previously.

The essential components of a Water Management Plan shall include:

- **Identification of Water Sources and Uses** - To include a water utility profile complete with demand data, service areas, water sources, and wastewater returns.

- **Analysis of Net Water Availability** - To validate or modify prior results using new data regarding consumptive and depletive water uses and the movement of water with HUC14 subwatersheds, leading to more current and defensible net water availability results. The use of more sophisticated water models can also be proposed, but must be at least as protective of the water regime as the RMP approach.

- **Mitigation Approach** - To discuss mitigation strategies and a prioritized approach to reducing deficits.

- **Funding Opportunities** - To address financial mechanisms that reflect the strategic approaches adopted in a water management plan.

- **Operation and Monitoring** - To conduct ongoing monitoring of uses and validation of mitigation. In these cases, affected entities could include counties or multiple affected municipalities at this scale.

- **Deficit Reduction and Elimination Strategy** – To describe, based on the prior analyses, the selected strategies for deficit reduction and elimination, including responsible parties, schedules, funding commitments, etc. The strategies in the Water Management Plan must be implemented as a commitment of RMP Plan Conformance.

There will be instances when a deficit subwatershed is a source to multiple municipalities – even if one or more municipality is not located in the subwatershed. There may also be instances where a larger planning entity may wish to develop the Water Management Plan. These entities could include a large
water purveyor, county government, or the Highlands Council itself if municipalities are unwilling or unable to develop such a plan. Therefore, the development of a HUC14 Water Management Plan would be more appropriate. Additionally, there will be instances where the hydrologic system is sufficient complex or HUC14 subwatersheds are sufficiently interconnected where development of a multi-subwatershed Water Management Plan is appropriate.

The mitigation approaches employed at a HUC14 subwatershed or multi-subwatershed level should be based upon the same priorities required of municipal Water Management Plans: stakeholders shall give water use efficiency and ground water recharge enhancements highest priority, then the development of new internal water supplies, and finally to the development of water resources from areas which are not in deficit.

**Coordination with NJDEP Water Allocation Program**

The Regional Master Plan addresses the potential for water use through a combination of land use capacity analysis and the required implementation of Water Management Plans. However, NJDEP’s Water Allocation Program is statutorily tasked with the actual allocation of water resources to those who wish to withdraw more than 100,000 gallons per day in the Planning Area and 50,000 gallons per day in the Preservation Area. To ensure that water resource deficits in HUC14 subwatersheds are not exacerbated and over time are reduced or eliminated, the NJDEP should, to the extent feasible under law, modify water allocation permits in the following manner:

1. Prior to Plan Conformance, new water allocation permits should not be approved nor existing water allocation permits increased unless the applicant demonstrates to NJDEP that it will not exacerbate a deficit, that the water use will be conducted at the maximum possible efficiency, and that 125% mitigation of increased consumptive and depletive water uses is ensured in accordance with the RMP policies and objectives and the Water Use Efficiency Program;
2. Prior to Plan Conformance, existing water allocation permits should be reviewed upon renewal and modified as necessary to limit the allocation to reasonably anticipated future needs, as constrained through improved water use efficiency, so that the allocation is limited to the minimum possible consumptive and depletive uses;
3. Subsequent to Plan Conformance, existing water allocation permits should be reviewed upon renewal and modified as necessary to reflect the reasonably anticipated future needs based on conformance with the RMP and implementation of the relevant Water Management Plan;
4. Subsequent to Plan Conformance, new water allocation permits should be approved only if they comply with the relevant Water Management Plan.

**The Efficient Use of Water**

**Issue Overview**

Water is a driving force behind many of the goals and policies of the Highlands Act, and protection of water supplies is a critical focus of the Regional Master Plan. Many Highlands Region subwatersheds face shortages of water, as current demands exceed estimated water availability for human and ecological purposes and therefore stresses aquatic ecosystems and puts human needs in jeopardy during droughts. In addition, municipalities served by Highlands reservoirs and some Highlands municipalities face future constraints on their ability to serve customers as water demands increase through redevelopment and development.
Therefore, it is important that New Jersey obtain the maximum benefit from its Highlands water resources through efficient use and, where feasible and appropriate, beneficial reuse and recycling of water. Water use efficiency has been increasing over the last 20 years, as State and Federal requirements for water conserving plumbing fixtures, appliances and irrigation systems affect a greater proportion of total development. Farmers are also becoming more efficient in water use, moving to drip irrigation and other conserving systems instead of high-pressure broadcast spray systems.

However, both the public utility customer base and irrigated farm acreage are increasing, creating more demands that offset improved water use efficiency. For this reason, while some urban areas have seen declining water sales over time (due to both water conservation and the loss of water-intensive industries), other municipalities have seen significant increases in total water use. Further progress in water use efficiency is needed. Many RMP policies and objectives address this need by encouraging general efficiency in water use, providing higher priority to agricultural water uses that employ best management practices, and calling for the use of water conservation, recycling and reuse (among other techniques) to both reduce and eliminate current and future water deficits.

RMP Policies and Objectives Addressed

Policy 2B4. To require through Plan Conformance the development and implementation of Water Management Plans to address any Current Deficit Areas or subwatershed that could become deficit areas based on projected development and water uses, to ensure sustainable water supply, water resource and ecological values.

Objective 2B4a. Water Management Plans shall include provisions to reduce consumptive and depletive uses of ground and surface waters as necessary to reduce or prevent deficits in Net Water Availability; or to ensure continued stream flows to downstream Current Deficit Areas from Existing Constrained Areas, to the extent practicable within each zone.

Objective 2B4b. Proposed increases in water use, including consumptive or depletive water uses, within a Current Deficit Area or an area where the proposed increase would cause the HUC14 subwatershed to become a Current Deficit Area shall provide mitigation equal to 125% of the proposed new consumptive or depletive water uses within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means. Objective 2B4c. All water users within a Current Deficit Area or Existing Constrained Area shall seek funding and opportunities to prevent exacerbation of and help reduce or eliminate existing deficits to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

Policy 2B5. To conditionally provide water availability within Current Deficit Area.

Objective 2B5a. A Current Deficit Area subwatershed that is primarily within the Existing Community Zone shall be assigned a Conditional Net Water Availability of 2 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.
Objective 2B5b. A Current Deficit Area subwatershed that is primarily within the Protection Zone or Conservation Zone shall be assigned a Conditional Net Water Availability of 1 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.

Policy 2B. To require, through local development review and Highlands Project Review, the use of water conservation, recycling and reuse methods (where appropriate) and devices for any redevelopment or development activity, including renovations to existing residential, institutional, commercial or industrial buildings, to minimize consumptive water use tailored to meet the resource protection and other goals for each Zone and considering subwatershed-specific conditions and Net Water Availability status.

Objective 2B8b. Prevent net increases in consumptive and depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

Objective 2B8c. Limit consumptive and depletive water uses in Existing Constrained Areas to 5 percent of the Ground Water Capacity to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

Objective 2B9b. Prevent net increases in consumptive and depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

Objective 2B9c. Limit consumptive and depletive water uses in Existing Constrained Areas to the 2003 consumptive and depletive water use plus 5 percent of the Ground Water Capacity (up to the standard thresholds in Objective 2B9a) to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to water reuse, recycling and conservation.

Objective 2B9d. Give highest priority for the use of Net Water Availability for agricultural and related water uses to those using best management practices for irrigation and other activities, and to Receiving Zones.

Objective 2B9e. Give highest priority for the use of Net Water Availability for non-agricultural water uses to clustered or compact development, Highlands Redevelopment Areas as designated by the Highlands Council, and Receiving Zones that result in the preservation of agricultural and environmentally sensitive lands.

Objective 2B10b. Prevent net increases in consumptive and depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit, emphasizing techniques including, but not limited to, water reuse, recycling and conservation.

Objective 2B10c. Limit consumptive and depletive water uses in Existing Constrained Areas to the 2003 consumptive and depletive water use plus 5 percent of the Ground Water Capacity (up to the standard thresholds in Objective 2B10a) to ensure continued stream flows to downstream Current Deficit Areas.
Deficit Areas, emphasizing techniques including, but not limited to, water reuse, recycling and conservation.

**Objective 2B10e.** Establish and implement best management practices for recreational, landscape irrigation and other practices through applicable State and federal programs.

**Objective 2J8a.** Require maximized feasible water conservation and recycling or any redevelopment or development activity, including renovations to existing single family residences and commercial/industrial buildings.

Program Summary

Water use efficiency has three basic components. First, water should be used efficiently regardless of water availability. This conservation principle, equivalent to a “good housekeeping” concept, prevents wasteful use of water even when water is plentiful, so that environmental impacts are minimized, infrastructure capacity is not strained, and the water uses do not result in a false sense that new supplies are needed.

Second, water should be used even more efficiently to reduce existing water deficits in subwatersheds and watersheds. These deficits indicate stresses on the aquatic ecosystems, and often will indicate stresses on ground water yields and downstream water supply facilities and threats to human use during droughts.

Third, water use efficiency should also be enhanced to avoid the need for additional water infrastructure. Delaying the need for new water supply facilities is highly cost-effective; water conservation measures generally cost significantly less per million gallons than new reservoirs, treatment facilities or water mains.

There is a fourth component that this program does not address, regarding conservation during drought emergencies; NJDEP already addresses this component fully.

Water use efficiency can be achieved in many ways, including:

- Supply-side conservation, such as leak detection and control and improved management of water storage facilities;
- Demand-side conservation, such as improved plumbing fixtures, appliance selection, irrigation controls, modified landscaping that reduces water needs, and use of car washes instead of hand washing;
- Beneficial reuse of water, either within a building structure or in a larger setting, where wastewater is treated and then reused on-site; and
- Recycling of water, such as the use of stormwater for irrigation purposes, where no special treatment of the water is required.

Analysis of Water Use Efficiency for Public Water Supplies

Analyzing the efficiency of water use for public water supplies, for all systems using Highlands water resources both within and outside the Highlands Region, requires an understanding of the customer base, affected land uses, leakage and water loss potential, and other factors. Efficient use rates for suburban areas (in gallons per capita per day, or gpcd) will be different from the rates for urban areas.

The Highlands Council will collaborate with NJDEP to determine existing water use rates for all public water systems using Highlands water, categorize the systems for comparison purposes, and assess the relative efficiency of water uses among common classes of public water systems.
The efficiency of water use by agriculture and other forms of self-supplied irrigation must be assessed based on the type of water need, irrigation practices, weather impacts, etc. The Highlands Council will collaborate with NJDEP and the NJ Department of Agriculture to determine existing water use rates for all agricultural and other self-supplied irrigation uses using Highlands water, categorize the uses for comparison purposes, and assess the relative efficiency of water uses among common classes of purposes. As these water users will be highly affected by weather, the assessment must include an analysis of how uses vary by season, year and climate conditions.

The creation of programs and standards for efficient water use requires an identification of appropriate metrics and targets. The Highlands Council will collaborate with NJDEP for all uses, and the NJ Department of Agriculture regarding agricultural uses, to select the most appropriate metrics for water use efficiency, and either regulatory or normative standards (as appropriate for each type of water use) that should be applied. For public water supply systems, metrics may include per capita water use and water loss ratios by system category. For non-potable uses, metrics will focus more on efficiency of meeting plant needs for specific crops during specific weather conditions.

All water uses in the Highlands should be efficient, so that environmental stresses are limited and the ability of water supplies to meet public needs is extended. The following general standards apply:

1. Meet all Uniform Construction Code requirements for the use of water conservation fixtures in new or rehabilitated structures;
2. All new and replacement lawn irrigation systems shall meet State requirements for controls based on soil moisture;
3. Non-potable irrigation water uses shall ensure that only the necessary amounts of water are used to achieve optimum plant growth, and such uses with Water Allocation permits shall be required to increase water use efficiency over the permit life to the maximum extent practicable;
4. New commercial development shall use internal recycling or beneficial reuse of water to the maximum extent practicable;
5. New development shall rely on stormwater for irrigation purposes to the maximum extent practicable, including but not limited to LEED-approved methods;
6. Water supply utility rates shall encourage end-user conservation;
7. Water supply utilities shall reduce water losses to the maximum extent practicable;
8. Water supply utilities shall provide routine consumer education to conserve water.

The elimination of water supply deficits on a subwatershed or watershed basis is addressed by a separate RMP program (see Highlands Restoration: Water Deficits) that give highest priority to water use efficiency and ground water recharge enhancements within the deficit area, then to the development of new internal water supplies, and last to the transfer of water resources from another area. These priorities address both environmental and cost issues.

Where deficit areas exist, the RMP calls for development of a Water Management Plan to determine how the deficit can be eliminated. Where a water supply utility faces constraints on its ability to supply consumers due to inadequate
transmission mains, treatment facilities or supply sources, the most effective method of avoiding major capital costs is water use efficiency. The same efficiency methods are applicable to both situations.

The following enhanced water use efficiency measures shall be considered, and where feasible, included in Water Management Plans or utility water supply plans to eliminate water availability or utility supply deficits, to the extent that they do not cause or exacerbate other environmental harm. Implementation or a firm commitment for implementation of the selected methods shall be required prior to approval of additional consumptive or depletive water uses or new water supply sources:

1. Incentive programs, up to and including full payment, for replacement of residential and commercial plumbing fixtures, water-using appliances and lawn irrigation systems with water conservation devices;
2. Incentive programs, up to and including full payment, for modification of residential landscaping to forms that require minimal if any artificial irrigation;
3. Incentive programs, up to and including full payment, for retrofitting of existing development with systems that allow for the beneficial reuse of water within the development;
4. Incentive and cost-share programs for replacement of agricultural irrigation and other water uses with water conservation devices;
5. Reduction of water losses within water utility systems to the maximum extent that is technologically feasible;
6. Modification of water rates to enhance financial incentives for water conservation by end users;
7. Enhanced consumer education regarding water conservation, including the potential for direct-to-consumer approaches.

Where a water utility or water user chooses to make a commitment to implementation of water use efficiency rather than implementing the measures prior to a new consumptive or depletive use, the following requirements shall apply:

1. All implementation measures shall be completed within one year of approval if the amount is less than 100,000 gallons per day in the Planning Area or 50,000 gallons per day in the Preservation Area, on average. Implementation may occur within a longer time period for larger amounts, up to five years from approval;
2. If the implementing entity is a public agency, the commitment must be in the form of a binding resolution or ordinance of the governing body, and the cost of implementation must be bonded to ensure sufficient resources;
3. If the implementing entity is a private corporation or individual, they must establish either an escrow account or provide bonding to ensure that the commitments are met. A public entity must be named as recipient of the escrow account or bonds in the event of default by the implementing entity, to be used by the public entity to complete implementation.

**Water Quality Restoration**

**Issue Overview**

Water quality affects drinking water, recreation, ecosystems, and aesthetic beauty. The most common parameters that affect surface and ground water quality are fecal coliform bacteria, phosphorus, temperature, arsenic, and nitrate-nitrogen.
These contaminants can either cause health risks if ingested or harm native biota, resulting in non-attainment of designated water uses for the waterbody. Other pollutants also exist, including industrial contaminants in ground water.

Water quality is influenced by the type and intensity of land use adjacent to and upstream of the waterbody. Pollutants are contributed to the environment from a wide variety of nonpoint sources (NPS) including human development (through stormwater and residential runoff, septic systems, fertilizer applications on lawns and Brownfields or contaminated sites), domestic or captive animals, agricultural practices (crop farming, livestock, and manure applications), and wildlife (large populations). Pollutants from these sources can reach waterbodies directly, through overland runoff, or through stormwater conveyance facilities. Point sources also exist, primarily wastewater treatment plants serving communities or industrial facilities. Each potential source will respond to one or more management strategies designed to eliminate or reduce that source of pollution. Each management strategy has one or more entities that can take lead responsibility to effect the strategy. Various funding sources are available to assist in accomplishing the management strategies. The Highlands Council in coordination with NJDEP will address the sources of impairment through systematic source track-down, remedial activities, matching strategies with sources, selecting responsible entities and aligning available resources to effect implementation.

The Highlands Act calls for the protection, enhancement, and restoration of the Region’s waters. Water quality in the Highlands Region, where polluted, must be restored to meet water quality standards, support designated uses, and support ecosystem needs. Where water quality is better than standards, protection is needed to ensure that antidegradation policies are met. Enhancement will be desirable at all times, through improved land management practices and other measures. Therefore, several RMP policies and objectives focus on water quality in the Region.

RMP Policies and Objectives Addressed

**Policy 2F1.** To identify surface and ground water resources currently impaired or at risk of impairment, and in need of protection, restoration or enhancement.

**Policy 2F2.** To coordinate with NJDEP regarding a unified water quality assessment and the development and implementation of Total Maximum Daily Loads, where necessary, for all surface waters within the Highlands Region.

**Policy 2F3.** To coordinate with NJDEP regarding a unified ground water quality assessment, monitoring and attainment program.

**Policy 2F4.** To coordinate with NJDEP regarding efforts to monitor areas of known contamination to ground water resources within the Highlands Region and activities to remediate and restore water quality.

**Policy 2F5.** To coordinate with NJDEP and other agencies to identify impairments and implement improved regulatory actions and management practices that will also support the water quality goals of the Highlands Act.

**Policy 2F6.** To remediate the pollutant sources associated with existing or historic land uses in conjunction with redevelopment.

**Policy 2G1.** To evaluate locations and density of development which are sustainable in conjunction with the use of best management practices applicable to these various water resource needs and support the protection and
management of critical lands for water quality purposes.

**Policy 2G2.** To reduce or avoid water quality impacts using requirements for water quality protection measures for new land uses through local development review and Highlands Project Review.

**Policy 2G3.** To adopt and implement water quality protections through Plan Conformance, local development review and Highlands Project Review.

**Objective 2G3a.** Prohibit land uses that would increase pollutant loadings to waters for which TMDLs have been adopted by NJDEP unless in compliance with the relevant TMDL.

**Objective 2G3b.** Ensure that new land uses draining to a stream designated as impaired but lacking a TMDL (i.e., Sublist 5) avoid increased pollutant loadings for the parameter or parameters for which a TMDL is required.

**Objective 2G3c.** Wastewater Management Plans or amendments shall demonstrate that the proposed service area will not directly or indirectly support development that would be in violation of an adopted TMDL.

**Policy 2G4.** To determine where water quality improvements are necessary or beneficial for the improvement of water availability, develop watershed-based plans to achieve such improvements such as restoration techniques including disconnection and reduction of existing impervious surfaces, develop implementation mechanisms, and implement these plans.

**Policy 2G5.** To adopt and implement storm water management controls through Plan Conformance, local development review and Highlands Project Review.

**Objective 2G5a.** Require recharge of clean stormwater rather than contaminated stormwater wherever feasible to meet stormwater management requirements, and to pretreat contaminated stormwater wherever its recharge is required.

**Objective 2G5b.** Require low impact development and other best management practices standards for stormwater management to minimize the discharge of stormwater-entrained pollutants to ground and surface waters.

**Objective 2G5c.** Implement agricultural best management practices for water conservation, water reuse, nutrient and pesticide application, animal waste management, environmental restoration, pollution assessment and prevention, and irrigation efficiency in farm operations for the protection of ground and surface water quality.

**Policy 2G6.** To establish minimum criteria for municipal water quality management programs.

**Objective 2G6a.** Develop technical guidelines and procedures for low impact development and best management practices to protect ground and surface water quality.

**Objective 2G6b.** Develop model municipal development regulations for the protection of ground and surface water quality.

**Objective 2G6c.** Require conforming municipal and county master plans and development regulations to incorporate relevant TMDLs, additional water quality protection measures and wellhead protection for public water supply wells and nitrate standards as development standards.

**Policy 2G7.** To promote the implementation of low impact development
standards and best management practices to protect the quality of ground and surface water quality.

Policy 2G8. To develop an educational program to further the understanding of the importance of water quality and methods of protecting water resources in the Highlands.

Policy 2L4. To establish methods for restoration of ground water quality for subwatersheds where existing ground water is impaired on a subwatershed by subwatershed basis.

Policy 2M1. To monitor and assess nitrate-related impacts to water resources within the Highlands Region.

Policy 2M2. To develop appropriate and innovative resource management programs to protect, restore, and enhance subwatersheds where existing ground water quality is impaired.

Objective 2M2a. Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems providing the systems meet the minimum standards of N.J.A.C 7:9A.

Program Summary

The RMP states the requirement to protect, restore, and enhance water in the Highlands Region. One way to protect and enhance water in the Region is to restore water quality. Water quality is affected by both current and historic land uses and a consistent and reliable assessment and characterization of the water quality in the Region is imperative in order to implement management strategies in appropriate areas.

This program will address these problems and provide guidance to restore degraded water quality. Assessment is followed by management planning, which then leads to the implementation of various management practices depending on the types of contaminants, their sources, and the restoration needs identified.

Water Quality Assessment

Since water quality is a concern throughout the Highlands Region, a consistent and reliable assessment and characterization of the water quality is imperative in order to implement management strategies in the corresponding area. The Highlands Council will coordinate efforts with the NJDEP:

- to inventory where surface water quality is impaired or at risk of impairment, and to list such waters on the NJDEP impaired water bodies (303d) list
- to inventory areas where ground quality is impaired or at risk of impairment by nitrates
- to improve water quality monitoring program areas for ground and surface water resources within the Highlands Region
- to coordinate efforts with the NJDEP and the U.S. Geological Survey to operate and improve the Ambient Stream Monitoring Network to assess the effectiveness of management measures
- to provide lake characterization and assessment reports
- to gain a full understanding of NPS pollution in the Highlands Region
- to inventory and track contaminated sites in the Highlands Region

These efforts will evaluate potential sources causing impairment and help track
TMDLs

The Highlands Council will coordinate efforts with NJDEP regarding the development and implementation of Total Maximum Daily Loads (TMDLs), where necessary, for surface waters in the Highlands Region. The adoption of TMDLs is a responsibility of NJDEP, to identify the reduction in pollutant loads to impaired surface waters necessary to meet surface water quality standards. NJDEP is also directly responsible for modifying wastewater discharge permits for point sources as necessary to implement the TMDLs. The Highlands Council will work with NJDEP to incorporate appropriate management measures into the Regional Management Plan for TMDL implementation, potentially including:

- Restrictions on new land uses regarding pollutant loadings
- Improved stormwater management requirements for new land uses
- Improved programs for reduction of pollutant loadings from existing land uses

Watershed Restoration Plans

Watershed Restoration Plans are used to develop and implement improved regulatory actions and management practices that will support the water quality goals of the Highlands Act and the Water Pollution Control Act. They often are used to identify more detailed management approaches for TMDL implementation, but can address additional issues such as stream and riparian area restoration, water quality enhancement and water quality protection. The Highlands Council will identify key HUC14 subwatersheds in the Highlands Region and either directly or in cooperation with other affected interests to develop Watershed Restoration Plans for approval by NJDEP and incorporation, as appropriate, into the Regional Master Plan or its programs. Approval of Watershed Restoration Plans by NJDEP makes the implementation projects eligible for State and federal funding.

Ground Water Restoration Plans

Areas of historic development on septic systems and agricultural use may have ground water contamination levels that greatly exceed the regional norm. The Highlands Council will work with NJDEP and USGS to identify these areas based on direct monitoring or models, as appropriate, and develop management approaches to address these issues. The management plans will be similar in concept to TMDLs or Watershed Restoration Plans. For areas of very dense septic systems, where the potential for well contamination is greatly elevated, primary emphasis will be on the protection of public health through the installation of public water supplies, community wastewater systems, or both. For areas of intensive agricultural use, the emphasis will be on programs described below, plus protection of the farmstead wells from health threats.

Implementation of Water Quality Restoration Projects: Agricultural Best Management Practices

Many programs are available to assist farmers in the development and implementation of resource and farm conservation management plans, including identification and management of any known nonpoint source pollution. The best means to reduce nonpoint source pollution is to implement best management practices (BMPs), such as low phosphorus fertilizer application, nutrient management systems, integrated crop management, grazing systems, organic farming, etc. The Highlands Council will coordinate its efforts with existing assistance programs of farm preservation and other approaches to reduce pollutant loads from agricultural operations and prioritize for EQIP, CRP, and
Implementation of Water Quality Restoration Projects: Stormwater Management Plans

Municipalities are already required to implement certain actions, including the adoption of stormwater management plans and ordinances and the implementation of management practices for municipal stormwater systems and facilities. The Highlands Council will:

- coordinate with counties, municipalities and other interests to develop and implement Regional Stormwater Management Plans in high priority HUC14 subwatersheds. These plans, where adopted by NJDEP, become part of each municipality’s stormwater permit;
- review Residential Site Improvement Standards for stormwater and determine whether improvements are necessary to better protect Highlands resources, and then coordinate with the Site Improvement Advisory Board for approval of those changes for municipal use;
- coordinate with appropriate interests to develop and implement Nonpoint Source (NPS) Management Measures and Control Projects including the implementation of retrofitted stormwater structural devices and nonstructural systems to collect and filter NPS pollutants such as: retrofitted stormwater drains, retention/detention/infiltration basins, swales, bioretention systems, the installation of cross-sectional catch basins to reduce NPS pollutants prior to entering a waterbody, and other stormwater best management practices as per NJDEP Stormwater BMP Manual and other guidance manuals, inspection, regularly scheduled stormwater basin cleanout and maintenance, storm sewer inlet cleanouts, street sweeping programs, and rehabilitation;
- identify alternative means of stormwater management that are more appropriate to rural and forested areas of the Highlands, potentially including use of stormwater wetlands, vegetated filters, land spreading and other non-structural techniques as per NJDEP Stormwater BMP Manual and other guidance manuals to reduce fecal coliform and Total Suspended Solids (TSS) input.

Implementation of Water Quality Restoration Projects: Streambank and Riparian Restoration

Streambank restoration and stabilization projects provide a reduction of sediment loads and nutrients entering a waterbody. These projects include riparian buffer restoration as well since they reduce and filter pollutant loads before entering a waterbody. Projects may involve dam removals, lake maintenance, riparian buffer and forest transition zone enhancement, restoring stream channels, restoring habitat to a more natural, native vegetated environment, and restoring wetlands and floodplains. Restoration projects such as reconnecting the natural drainages and improving the outfall channel connection reduces sediments and stream velocity thus restoring the natural hydrology and enhancing fish and wildlife populations. For more information refer to the Streams/ Riparian Restoration Program.

Implementation of Water Quality Restoration Projects: Wildlife

Excessive deer populations, in addition to their habitat destruction, have been identified as a potential source of pollution in impaired watersheds. The forested and low-density residential areas that provide deer habitat often can be found in close proximity to the impaired stream segments. Deer have been evaluated in TMDL reports by other states (e.g. Alabama and South Carolina) and could be a...
source of pollution in New Jersey. Their browsing of understory plants can change stormwater runoff potential in woodlands. Management measures to reduce pollution contributed by wildlife are not generally practicable, but could respond to measure such as improved riparian buffers, no feed ordinances, and signage. Other wildlife species, such as beavers or raccoons, have been identified as causing long-term damages if populations are excessive. Management may be necessary where the excessive populations are long-term, rather than episodic.

<table>
<thead>
<tr>
<th>Implementation of Water Quality Restoration Projects: Septic System Management</th>
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<tbody>
<tr>
<td>Where septic system service areas are located in close proximity to impaired waterbodies, septic surveys should be undertaken to determine if there are improper effluent disposal practices that need to be corrected. Septic system management programs should be implemented in municipalities with septic system service areas to ensure proper design, installation and maintenance of septic systems. The Highlands Council will use GIS data to identify areas with concentrations of septic systems near water bodies, and will coordinate with municipal and county Boards of Health regarding surveys and management programs. For more information refer to the Wastewater System Maintenance Program.</td>
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<tr>
<th>Implementation of Water Quality Restoration Projects: Contaminated Site Remediation</th>
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<tbody>
<tr>
<td>To protect water resources from contaminated sites, the Highlands Act requires a coordinated implementation of all remediation standards and remedial actions. The NJDEP’s Technical Requirements for Site Remediation at N.J.A.C. 7:26E, et seq. are the current State standards for the clean up of contaminated sites. The Council through interagency coordination and project review activities will evaluate and assess the need for protecting Highlands Resources through enhanced standards and practices in support of remedial actions, restoration and redevelopment. The clean up of contaminated properties in support of Highlands resource protection needs is a long term goal for the Council. This program component supports many of the RMP polices that are designed to ensure that restoration and redevelopment of these sites complement RMP goals and initiatives.</td>
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<th>Education/ Outreach</th>
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<tr>
<td>Educating the public, farmers, landowners and municipalities with outreach programs is important for the success of water quality improvements. Educational programs may cover:</td>
</tr>
<tr>
<td>• addressing NPS pollution and implementation of an educational outreach program that encourages municipal officials and residents to protect their water resources and participate in water management activities to reduce the amount of NPS pollution entering the surface and ground water</td>
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<tr>
<td>• developing an education program about low phosphorus fertilizers and soil testing for lawn applications</td>
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<tr>
<td>• developing educational programs for the replacement or supplementing of lawns with native vegetation</td>
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<tr>
<td>• educating the agricultural community and working with farmers to protect water quality through the adoption of sustainable farming and grazing practices, nutrient and pest management, and supporting organic operations and a transition to organic operations, enrolling into Integrated Crop Management, and fertilizer chemical reductions (see the Agricultural Management and Sustainability Program)</td>
</tr>
<tr>
<td>• public education on the benefits of native aquatic vegetation in shallow lakes</td>
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and the balance of aquatic life uses with recreational uses of a lake
- Highlands Council guidance manual for water quality restoration for use by municipalities and homeowners, include BMPs and other land management activities that will address water quality concerns.

### Wastewater System Maintenance

#### Issue Overview

All development requires some form of wastewater treatment system. All forms of wastewater treatment systems require proper operation and maintenance (O&M). Unfortunately, most homeowners do not properly maintain their septic systems and many do not operate them properly, leading to failures that put human health and the environment at risk. Local Health Boards have the authority to require correction of failures, but maintenance is more cost-effective. NJDEP has proposed that all municipalities have some form of septic system maintenance program, but has no ability to mandate such programs where the municipality decides not to participate in Wastewater Management Plans. Only a few Highlands municipalities currently have such programs, and smaller municipalities will likely need assistance to implement septic system maintenance programs. Finally, in some cases, primarily in older communities, homes do not have modern septic systems but instead rely on cesspools or even less effective discharge methods. In all cases, increased septic system density and proximity to sensitive resources (e.g., wells, surface waters) increase the importance of proper O&M.

Community-based systems, such as communal septic systems and small treatment systems, are regulated by NJDEP under the NJPDES program to ensure proper O&M, but not all such system owners are financially and technically capable of ensuring that their systems routinely meet NJDEP requirements through decades of use. Moreover, NJDEP is prohibited from requiring that such facilities have co-permitees to ensure long-term compliance. While NJDEP can take enforcement action regarding its permit conditions, financial failure of the system owner is not easily remedied.

Wastewater systems operated by utility authorities and municipal government are generally well-financed through fee-based programs that have a sufficient user base. In addition, NJDEP permitting and enforcement provides sufficient surety of proper O&M. Accordingly, the RMP does not address O&M for these systems.

#### RMP Policies and Objectives Addressed

**Objective 2K3b.** (Protection Zone and the Conservation Zone) Prohibit new, expanded, or extended wastewater collection or treatment outside of Existing Areas Served unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area, or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.

**Objective 2K3c.** Expansion of wastewater service shall be permitted in areas where there is a demonstrated threat to public health caused by a pattern of documented failing septic systems located within Existing Areas Served, or adjacent to Existing Areas Served where the failing septic systems cannot reasonably be addressed through rehabilitation or replacement of the existing
Objective 2K3d. Permit cluster development served by existing or expanded wastewater collection and treatment systems in an Agricultural Resource Area only where such development is within or immediately adjacent to an Existing Areas Served and adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes and provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.

Objective 2K3e. Ensure that new growth and development that is not served by public wastewater collection and treatment systems is limited to densities suitable for on-site wastewater treatment.

Objective 2K3f. Cluster development utilizing community-based on-site treatment facilities shall be permitted: (1) where such development is not within an Existing Area Served or adjacent to an Existing Area Served with available capacity, (2) where the system is designed and has capacity only for the cluster development, (3) where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served, (4) where adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes, (5) where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service, and (6) provided that the proposed development is otherwise consistent with the goals and requirements of the Plan.

Objective 2K4a. (Existing Community Zone) The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served.

Objective 2K4c. Allow the expansion or creation of wastewater collection systems beyond Existing Areas Served to serve lands which are appropriate for infill or redevelopment, or to serve areas if they are shown to be necessary for and are approved by the Highlands Council to address a documented threat to public health and safety where no alternative is feasible, to serve cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.

Policy 2L5. To establish minimum standards for the placement, design, monitoring and maintenance of septic systems necessary to protect, restore, and enhance ground water quality.

Objective 2M2a. Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems.
Highlands Final Draft Regional Master Plan

to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems providing the systems meet the minimum standards of N.J.A.C 7:9A.

Program Summary

This program helps to ensure that on-site and small community wastewater treatment systems are properly maintained, using methods that complement NJDEP’s existing or proposed requirements. It is focused primarily on septic system maintenance and on small community-based systems (e.g., package plants).

Regarding septic systems, the primary purposes are: (1) to ensure that their O&M minimizes the potential threat to public health and the environment, and (2) to reduce the potential need for creation or expansion of sewer systems into non-sewered areas. In many cases, the expansion or creation of sewerage to address septic system failures or excessive density is very costly and could increase demand for other development in inappropriate areas.

Regarding the community systems, the primary purposes are: (1) to ensure that the systems retain their viability through proper O&M, and (2) to prevent the need for a transfer of system ownership due to fiscal collapse.

Routine Maintenance of Residential Septic Systems

Municipalities shall, as a requirement of Plan Conformance, adopt municipal or Board of Health programs and ordinances (or participate in regional Board of Health programs) to improve the maintenance of existing and new residential septic systems.

The following maintenance standards apply:

1. Municipalities shall, at a minimum, implement the programs required under the Water Quality Management Planning rules, N.J.A.C. 7:15;
2. Where septic systems exist at a density equal to or lower than the LUCM Zone target, and are not within a Wellhead Protection Area or Highlands Open Water Buffer area, proper O&M shall be encouraged through the annual provision of information to the landowner regarding O&M responsibilities;
3. For septic systems other than those in Step 2, proper operation shall be encouraged through annual information to the landowner regarding operation responsibilities, and maintenance shall be ensured through a regulatory system requiring proof of proper maintenance, including but not limited to septic system pump-out, methods to prevent solids and grease migration into the distribution system, and no evidence of chemical disposal that disrupts the biological treatment of wastes.

Life-cycle Maintenance of Residential Septic Systems

Municipalities shall, as a requirement of Plan Conformance, adopt municipal or Board of Health ordinances (or participate in regional Board of Health programs) addressing the long-term maintenance needs of new residential septic systems, by requiring that each developed lot include a specified location for a replacement drain field. All septic system drain fields eventually fail as solids and microbial growth clog the field, and therefore require a replacement field to ensure that the system will not fail without potential for rehabilitation at great cost.

Upgrading & Replacement of Septic Systems

Municipalities shall, as a requirement of Plan Conformance, adopt municipal programs or Board of Health ordinances (or participated in regional Board of Health programs) to improve the maintenance of existing and new residential septic systems.
Residential Cesspools and Other Inadequate Wastewater Systems

Health programs) addressing the upgrade of residential wastewater systems that do not perform in a manner similar to or better than standard septic systems. Specifically, at least at time of system failure or property sale, whichever comes first, residential cesspools and other inadequate systems must be upgraded to meet NJDEP Individual Subsurface Disposal System requirements to the maximum extent feasible given site conditions. Priority shall be placed on such systems that are located in dense development that is dependent on on-site systems, or are within a Wellhead Protection Area or Highlands Open Water Buffer area.

Upgrading of Septic Systems to Address Pollution Threats

For ground water quality, unlike surface water quality, there is no specific program for identifying areas of potential contamination and developing a management plan to restore ground water quality. The Highlands Council shall use its available information on residential development outside of sewer service areas to define locations where existing septic system density significantly exceeds the LUCM Zone or NJDEP nitrate targets, as potential contamination areas related to septic system density. The Highlands Council will rank the areas by size, severity and threat to human health and the environment, and work with municipalities to identify cost-effective methods, where available, to restore ground water quality.

Methods may include one or more of the following:

1. Upgrade of existing septic systems to alternative on-site treatment systems, at times which maximize cost-effectiveness of the upgrade (e.g., when existing systems fail). Where the alternative systems require special O&M, they should only be implemented if the O&M is ensured;
2. Replacement of individual septic systems with a communal septic system or communal alternative treatment system, with ownership and management in place to ensure O&M;
3. Replacement of individual septic systems with a community-based wastewater treatment system sized to address only the project area, with ownership and management in place to ensure O&M;
4. Extension of public sewerage where it will not have significant secondary effects such as pressures to develop other areas in Conservation and Protection Zone, which are inappropriate for sewerage.

Alternative Management Approaches for New Septic Systems

The traditional approach to septic systems is ownership, operation and maintenance of septic systems by the homeowner. Maintenance is usually not performed, and few homeowners are aware that septic systems have a lifespan and will require replacement, usually at a very high cost. As an optional approach, developers, municipalities, counties and the Highlands Council should consider the establishment of alternative management systems.

The following general concepts would ensure that septic systems are managed in a manner more equivalent to other utility services, with proper maintenance and methods to ensure that homeowners do not face major, unanticipated costs:

1. Ownership of the septic system may remain with the homeowner or, similar to other utility services, be placed with a public or investor-owned utility;
2. Where the septic system remains the property of the homeowner, a mandatory condition of development approval would be a requirement that each homeowner have a maintenance contract for the entire life of the septic system and any replacement;
3. The maintenance contract would provide for routine maintenance, repairs and ultimate replacement, with costs spread over the contract life;
4. Where septic system ownership is with the utility, a fee-based system would address life-cycle costs for routine maintenance, repairs and ultimate replacement.

Requirements for New Small-Community Wastewater Systems

Proposals for development in a Existing Community Zone, Highlands Redevelopment Area, Council-approved cluster development site, or Council-approved replacement of existing septic systems for public health reasons may require the use of a community-based wastewater treatment system.

These systems must be addressed through municipal Plan Conformance approval and must meet the following requirements:

1. The related development must meet all relevant RMP requirements regarding environmental constraints, applicable Land Use Capability Zone policies, and other goals, policies and objectives;
2. The community-based system must be sized such that it only provides capacity for the planned site;
3. The community-based system must be owned and operated by an entity with sufficient financial capacity and operating expertise to ensure proper O&M over the life of the community. Owners may include utility authorities, municipal utilities, State agencies, and investor-owned utilities regulated by the NJ Board of Public Utilities;
4. The system and proposed service area must be approved by NJDEP as part of an Areawide Water Quality Management Plan or component Wastewater Management Plan, and permitted by NJDEP under the NJPDES program.

Management of Existing Small-Community Wastewater Systems

Where community-based wastewater systems already exist, their continuing financial viability and proper O&M are of concern. All such facilities should already be part of an Areawide Water Quality Management Plan or component Wastewater Management Plan, and permitted by NJDEP under the NJPDES program. Where the owner/operator is a utility authority, municipal utility, State agency, or investor-owned utility regulated by the NJ Board of Public Utilities, no action is needed.

Municipalities, counties and the Highlands Council should explore methods by which other facilities can continue to provide sufficient treatment throughout the lifespan of existing communities. Options include:

1. Requirements for annual reports from the system owner/operator discussing revenue, expenditures, reserve funds, O&M issues, etc., to help identify potential concerns that should be addressed;
2. Allowing homeowners associations to transfer ownership of the system to a utility authority, municipal utility, State agency, or investor-owned utility regulated by the NJ Board of Public Utilities, with a fee-based system for future O&M;
3. Establishing a special taxation district to provide funding for system O&M in lieu of homeowner association dues, etc.;
4. Establishing a regional utility authority to either take ownership of or provide O&M services under contract for multiple community-based systems.
Part 3. Agricultural Resources

Agricultural Management & Sustainability

Issue Overview

Agriculture, if it is to remain viable in the New Jersey Highlands, requires a land base. The Highlands Region contains over 859,000 acres of which over 118,000 acres were agricultural land in 2002. These agricultural acres serve not only as important agricultural resources, but are essential to the residents of New Jersey for local availability of agricultural products, for the economic benefits of agricultural production, and for the rural landscape associated with agricultural areas.

In order to protect these important farmland resources, preservation of farms throughout the Highlands Region must be encouraged and funded. Additionally, programs are needed that focus more on the practices farmers can use to achieve sustainable profitability, sustainable use of natural and management resources, and sustainable coexistence with non-farmers in a densely populated state.

The preservation of farmland and the promotion of agriculture in the Highlands Region are two essential objectives of the Highlands Act. The New Jersey Legislature declared that the agricultural lands in active production in the Highlands Region are important resources of the State that should be preserved, and that the agricultural industry in the Highlands Region is a vital component of the economy, welfare and cultural landscape of the Garden State. The Legislature also declared that the maintenance of agricultural production and a positive agricultural business climate should be encouraged to the maximum extent possible wherever appropriate in the Highlands.

RMP Policies and Objectives Addressed

Policy 3A5. To promote farmland preservation within the Agricultural Resource Areas and accord priority to the preservation of agricultural lands within Agricultural Priority Areas, through fee simple acquisition, less than fee acquisition, Transfer of Development Rights and other agricultural land conservation techniques.

Policy 3A6. To ensure through Plan Conformance, local development review and Highlands Project Review that land uses within an Agricultural Resource Area minimize conflict with or support sustainable agriculture, or are compatible with cluster development that preserves agricultural lands, and support the resource protection requirements of the RMP.

Objective 3A6a. Implementation of regulations which limit non-agricultural uses within an Agricultural Resource Area to those uses that support the preservation of farmland, the continued viability of the agricultural industry, or are compatible with cluster development that preserves agricultural lands, and support the resource protection requirements of the RMP.

Policy 3A7. To permit through local development review and Highlands Project Review limited development, including family and farm worker housing in Agricultural Resource Areas which are accessory to and/or supportive of sustainable agriculture, subject to compliance with the resource management programs of the RMP.

Policy 3A10. To establish and implement resource management programs which protect agricultural resources during local development review and Highlands...
Objective 3A10a. Implement regulations which ensure non-agricultural land development within an Agricultural Resource Area protects and enhances agricultural production, protects important farmland soils, and meets other natural resource management and protection requirements.

Objective 3A10b. Implement regulations which provide that all non-agricultural development which is proposed in an Agricultural Resource Area comply with open space design requirements to avoid conflicts between such development and agricultural activities and protect farmland and sensitive environmental resources.

Objective 3A10c. Implement regulations which require mandatory clustering for residential development in an Agricultural Resource Area with adequate provision for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.

Objective 3A10d. Implementation of regulations which require that all land preserved as farmland or natural resource area as a result of clustering be subject to a conservation easement enforceable by the appropriate municipality and the Highlands Council.

Policy 3A13. To advocate for the amendment of the Farmland Assessment Act to permit the inclusion of credits for the control of invasive species, white-tailed deer reduction programs, and the water value of well-managed agricultural lands.

Policy 3A14. To work with the State Agriculture Development Committee and the Garden State Preservation Trust to establish incentives for any landowner in the Highlands Region seeking to preserve land under the farmland preservation program that would be provided in exchange for the landowner agreeing to permanently restrict the amount of impervious surface and agricultural impervious cover on the farm to a maximum of five percent of the total land area of the farm.

Policy 3B1. To encourage private and public owners of lands within an Agricultural Resource Area to lease open lands to farmers and/or to manage open space lands in a manner which is compatible with adjoining agricultural uses.

Policy 3B2. To promote research and study, and support proposals to enhance the long-term viability of the agriculture industry in the Highlands Region through innovative programs with regard to health care, banking practices, housing and labor.

Policy 3B3. To seek additional funding from any and all state and federal funding programs for agriculture within the Highlands Region.

Policy 3B4. To coordinate with other municipal, county, State and federal agencies to ensure to the maximum extent practicable that other agency programs
Policy 3B5. To promote and enhance innovative agricultural practices including direct marketing, farmers markets, roadside stands, agro-tourism and community supported agriculture.

Policy 3C1. To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a Agricultural Resource Area within the Protection Zone and the Preservation Area, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or mandatory cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of agricultural lands within the Agricultural Resource Area.

Policy 3C2. To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a Agricultural Resource Area in a Conservation Zone, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or mandatory cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of agricultural lands within the Agricultural Resource Area.

Policy 3D1. To promote the use of appropriate alternative and innovative wastewater treatment systems to provide enhanced protection of surface and ground water quality in Agricultural Resource Areas of the Conservation Zone.

Policy 3D2. To promote efforts to increase Integrated Pest Management and Integrated Crop Management programs and other innovative management techniques that reduce pesticide and fertilizer use in conjunction with agricultural activities.

Policy 3D3. To identify subwatersheds with elevated nitrate levels, develop management plans for enhancing water quality, and implementing those plans in ways that enhance agricultural viability wherever feasible.

Program Summary

This program inventories existing agricultural lands; establishes the resource value of agricultural lands; utilizes the ranking criteria in support of farmland preservation programs; maximizes the existing federal, State, and county farmland preservation and agricultural sustainability programs; and develops stewardship and sustainability programs that are essential to the residents of New Jersey for local availability of agricultural products, for the economic benefits of agricultural production, and for the rural landscape associated with agricultural areas.

Identification of Agricultural Lands

Agriculture is a vital component of the culture and the landscape of the Highlands Region. It provides economic benefits through agricultural production and maintaining the rural character of Highland’s communities. The loss of farmland over recent decades emphasizes the crucial need to promote and
encourage a positive agricultural business climate. In order to accomplish this goal, the Highlands Council, collaborating with the NJ Department of Agriculture (NJDA), Highlands County Agriculture Development Boards (CADBs) and the State Agriculture Development Council (SADC) must first identify and inventory the scope of the agriculture industry in the Highlands Region, through use of NJDEP land use/land cover data, aerial photography, data on lands eligible for farmland assessment, agricultural surveys and other data sources.

**Establishment of Agriculture Preservation Priorities**

The viability of Highlands Region farming depends upon a healthy agricultural environment and land base that encourages long-term, commercially significant agriculture. To continue to achieve the objective of protecting farmland in the Highlands Region, the Council will identify productive agricultural lands through an assessment of their agricultural and natural resource and other values in order to prioritize those values for preservation. The purpose for designating resource values in agricultural areas is to preserve, stabilize, and enhance the primary agricultural land base that is being used for, or offers the greatest potential for continued, commercially significant agricultural production. High priority areas for agricultural preservation will be established in consultation with the SADC.

In order to determine the priority areas for farmland preservation, the Highlands Council utilized the results of the agricultural resource assessment to identify those lands within the Highlands Region which have the highest agricultural resource values. The figure *Agricultural Priority Area* displays the relative value of the agricultural resources in order to provide a prioritization mechanism for the future farmland preservation activities in the Highlands Region. The *Agricultural Priority Area* figure also identifies lands protected as preserved farmland to show the pattern of farmland preservation activities that have already occurred in the Region.

**Implementation of Strategies for Agriculture Preservation by Maximizing Current Agriculture Preservation Funding Programs**

One of the fundamental elements of the Highlands Act is the emphasis on farmland preservation to ensure that public funds and other resources are focused on protection of critical Highlands resources. The *Sustainable Agriculture Technical Report* identifies nine federal, State, county, municipal, and nonprofit farmland preservation funding programs. The Highlands Council will collaborate and coordinate with agencies (in particular the NJDA and SADC), local governments, and local organizations to target and preserve natural and agricultural spaces in support of the RMP.

**Implementation of Strategies for Agriculture Stewardship by Maximizing Current Agriculture Stewardship Funding Programs**

The *Sustainable Agriculture Technical Report* also identifies 16 federal, State, county, municipal, and nonprofit conservation and stewardship funding programs. The Highlands Council will collaborate and coordinate with agencies (in particular the NJDA, SADC, Natural Resources Conservation Service (NRCS), and North Jersey Resource Conservation and Development Council (NJRC&D)), governments, and local organizations to properly manage the preserved natural and agricultural spaces in support of the RMP. This effort is necessary to ensure that the natural resources targeted for acquisition are not later lost through insufficient stewardship.

**Establishment of Alternative/New Agriculture Preservation**

SADC in association with CADBs preserves farmland through the purchase of development easements. One criterion for prioritizing farmland preservation is the percentage of land in crop production. As a result, a farm that is heavily...
Agricultural Priority Area

Legend

Agricultural Priority Area
- Low
- Moderate
- High
- Preserved Farms

Roadway Network
- Interstate Highways

Administrative Boundaries
- County Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
- New Jersey Highlands Council, 2007
- State Agriculture Development Committee, 2006

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The State of New Jersey shall not be liable for any actions taken or omissions made from reliance on any information contained herein from whatever source nor shall the State be liable for any other consequences from any such reliance. Additional sources of information may include NJDOT and NJDEP GIS digital data, but this secondary product has not been verified by NJDOT or NJDEP.
### Programs

Forested may not be considered a priority for preservation by the SADC. Additionally, lots that are entirely forested with woodland management plans and are farmland assessed are not considered farms for purposes of SADC preservation. However, such lands are productive woodlands and also critical to protection of Highlands natural resources. The Highlands Council will collaborate with NJDEP and SADC to develop an adequate method to preserve forested lands through easements to allow them to remain in private ownership and properly maintained through woodland management, in addition to the TDR mechanism established through the Highlands Act.

### Establishment of Alternative/New Agriculture Stewardship/ Sustainability Programs

For long-term sustainability of the natural and agriculture resources in the Highlands Region, stewardship and sustainability programs should include, but not be limited to:

- Proactive reduction of deer populations and non-native species, reduction in the forest fragmentation and the creation of incentives for landowners to retain property in its natural or agricultural state
- Innovative management techniques that reduce pesticide and fertilizer use such as integrated pest and crop management
- Innovative agricultural practices including direct marketing, agri-tourism, and community supported agriculture

The Highlands Council will collaborate with the NJDEP, NRCS, Rutgers Cooperative Extension, Soil Conservation Districts, CADB and the NJDA to develop these management techniques and incentives. Additionally, intrinsic values for forests and agriculture including water quality protection must be established.

### Establish Incentives for Voluntary Impervious Cover Limitations on Agricultural Lands

Because the preservation of contiguous acres of farming soils is vital to the viability of agriculture in the Highlands Region, incentives need to be in place in order to maximize the utilization of those soils. In many cases, the creation of extensive impervious land cover on Highlands farms will result in significant environmental impacts, similar to the increase of impervious land cover from residential, commercial and transportation development. In addition, impervious cover that involves soil compaction and concrete pads can also permanently damage soil productivity potential. Finally, intensive impervious cover can harm the rural nature of agricultural areas. As a result, impervious cover limits on farmland through incentives, voluntary programs and easements that supplement SADC easement purchases need to be made available. The Council will seek to limit the potential for added impervious cover on farmland through such initiatives, including but not limited to the use of federal Farm Bill programs. These voluntary efforts are distinct and separate from Highlands Act requirements for NJDA review of increased impervious cover for farms in the Preservation Area and the requirement for farm conservation or resource system management plans for such development activities.

### Development of Open Space/ Conservation Design Standards

Not all agricultural lands worthy of preservation can be preserved because of limited funds and other factors. As a result techniques and systems that enable limited growth and the preservation of farmlands are needed. The Highlands Council will develop Open Space/Conservation Design development layout standards that support the RMP and which take advantage of, but are not limited to, techniques such as residential clustering and lot-size averaging and the
establishment and implementation of resource management programs which protect agricultural resources during site plan or subdivision review and approval. In the case of clustering, which requires retention of the undeveloped land by a homeowners association or a municipality, the standards will emphasize layouts that maximize the potential for continued farming under leases.

**Cluster Development**

Preservation cluster development with a minimum of 80 percent open space will provide for a development that allows agriculture to continue. The clusters should use public sewer systems where feasible and appropriate to maximize the amount of open space and eliminate the impact of septic tank systems. (see *Cluster Program*).

**Additional Land Use Opportunities**

Additional business opportunities should be provided to the owner/operators of farm to increase the economic potential of the farm unit. Alternates to a home occupation business types; home business and cottage industry, should be permitted on farms above a minimum land area threshold should be permitted as a matter of right. The ability of a farm family to have a bed and breakfast, agricultural product processing facility, artisan or craft business with several employees other than family members enhances the ability of the farm to continue as an agricultural operation.

**Identification of Willing Sellers**

The Garden State Preservation Trust legislation requires that direct acquisitions by Green Acres and the SADC be from willing sellers. The Highlands Council will develop an outreach and education program for Highlands landowners to help them be aware of and take advantage of funding opportunities and incentives available for land preservation.

**Establishment of a Farmland Preservation and Stewardship Technical Assistance program**

The Highlands Council, in cooperation with other entities, will implement a technical assistance program for farmland preservation and stewardship. For example, 28 Highlands municipalities do not have open space trust funds and the municipalities and counties that do may not be maximizing their potential; the Council can provide assistance in creating or amending their open space trust funds. Additionally, land acquisition by fee purchase or by easement is a major tool to protect natural resources and agricultural lands. Guaranteeing that these resources remain intact and viable is an overarching responsibility of the preserved landowner and easement holder. The Highlands Council will implement a program to aid in the development of federal, State, municipal, nonprofit, and individual stewardship plans which will include, but not be limited to, baseline documentation, monitoring, landowner/user relations, and enforcement.

**Identification of Subwatersheds with Elevated Nitrate Levels & Development of Management Plans**

The Highlands Council will identify subwatersheds with elevated nitrate levels, develop management plans for restoring water quality, and implement those plans in ways that enhance agricultural viability wherever feasible through focused application of stewardship and sustainability programs, such as those described above. (See *Water Quality Restoration Program* for more details.)

**Historic Resource Protection**

**Issue Overview**

The Highlands is home to many and varied historic, archaeological and cultural resources, and the Highlands Act requires that the Regional Master Plan include measures in both the Preservation and Planning Areas to preserve these
resources. With a long history dating back at least 11,000 years to the first Native American settlements, the area has figured prominently in the history of both the State and the country. Rich in valuable resources, the Region has attracted human settlement for thousands of years and been the site of changing technology and anthropology. The Highlands’ character is indelibly marked by its history and benefits from vestiges of earlier days. These resources contribute to the community’s character, its economic vitality, its potential for heritage tourism, and its sense of place and time. Their protection and enhancement can continue to support these important characteristics of the Highlands into the future.

The Highlands’ historic, archaeological and cultural resources have been treated differently from town to town and county to county within the Region. In some communities these resources are appreciated, utilized and incorporated into the fabric of daily life. In other instances they are not identified and so opportunities to protect or rehabilitate are lost.

Although the State Historic Preservation Office, the New Jersey Historic Trust, and the Office of Smart Growth may offer technical and funding assistance, there is no comprehensive program in place to encourage local agencies to proactively identify, protect and enhance their historic, archaeological and cultural resources. Many localities are not aware of all of the resources that exist within their borders and may lack access to programs geared toward protection and enhancement of these resources, as well as the methods that can turn these resources into meaningful contributors to the economic health of the community.

### RMP Policies and Objectives Addressed

**Policy 4A1.** To maintain and periodically update the Highlands Region Historic and Cultural Resources Inventory.

**Objective 4A1a.** Encourage municipalities and counties to include a historic, cultural and archaeological survey(s) as part of the Historic Preservation Plan element of their master plans.

**Policy 4A2.** To provide a process whereby resources may be nominated, considered and included in the Highlands Historic and Cultural Resources Inventory.

**Policy 4A3.** To ensure through local development review and Highlands Project Review that human development does not adversely affect the character or value of resources which are listed on the Highlands Historic and Cultural Resource Inventory to the maximum extent practicable.

**Policy 4A4.** To require that the impact of proposed human development on the historic and cultural resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval.

**Objective 4A4a.** All applications for site plan or subdivision approval shall include identification of any cultural, historic or archaeological resources in the Highlands Region which are listed on the Highlands Historic and Cultural Resource Inventory and may be affected by the proposed development.

**Objective 4A4b.** All development which affects identified cultural, historic or archaeological resources shall comply with minimum standards for the preservation of the affected resources.

**Policy 4A5.** To use the Secretary of the Interior’s Standards for the Treatment of
Historic Properties as the standard for municipal historic and cultural preservation review and include, at a minimum, the preservation and re-use of historic structures.

**Policy 4A6.** To coordinate the Highlands Council’s activities with regard to the historic and cultural resources with the New Jersey Historic Trust and the State Historic Preservation Office.

**Policy 4A7.** To promote historic and cultural heritage tourism in the Highlands Region.

**Policy 4A8.** To encourage municipalities and counties to establish historic preservation commissions or boards to review applications for development which affect historic, cultural and archaeological resources listed on the Highlands Historic and Cultural Resources Inventory.

**Policy 4C1.** To require that conforming municipalities and counties include a Historic, Cultural and Scenic Resource Protection Element in municipal and county master plans and development regulations and update the Historic and Cultural Resources Inventory through local development reviews.

**Policy 4C2.** To require that conforming municipalities and counties include minimum standards for the protection and enhancement of historic, cultural and archaeological resources listed in the Highlands Historic and Cultural Resources Inventory in their development regulations.

### Program Summary

The program is designed to identify where historic, archaeological and cultural resources exist within the Highlands Region and to provide guidance and support to local government entities in managing and protecting the resources within their borders.

### Identification of Historic, Archaeological and Cultural Resources

Municipalities are encouraged to use a range of methods to identify the historic, archaeological and cultural resources within their communities. They should require all development reviews to include identification of any relevant resources as part of their applications. Planning work sessions and checklists should include historic, archaeological and cultural resources as a review component. Sensitive treatment of existing resources and commitment to minimal negative impacts should be the standard for decision-making.

Municipalities and counties shall, as a requirement of conformance, include within their master plan a Historic Preservation Plan element that identifies the location and significance of known historic, archaeological and cultural resources within their borders and the immediate surrounding area, using accepted State or federal definitions of such resources. They should whenever appropriate conduct historic, archaeological and cultural survey(s) and include these as part of the Historic Preservation Plan element.

Historic, archaeological and cultural resources that are identified through surveys, preservation plans and development plans shall be provided to the Highlands Council and reviewed and evaluated for inclusion in the Highlands Region Historic and Cultural Resources Inventory. A procedure for conducting the reviews and evaluations shall be developed in coordination with the State Historic Preservation Office.

### Protection and Management of

Municipalities will be encouraged to:

| Program Summary | Identification of Historic, Archaeological and Cultural Resources | Protection and Management of |
Highlands Final Draft Regional Master Plan

Historic Resources

- establish a Historic Preservation Commission or similar entity to provide advice and recommendations on all land development applications and land planning decisions;
- adopt ordinances, zoning rules, development regulations and programs that protect the integrity of historic, archaeological and cultural resources and the integrity of their surroundings, and to address potential reuse and rehabilitation of historic structures;
- designate historic structures and their surrounding land as historic sites and permit clustering to help protect them within preserved lands or as open space to maintain the structures within their settings;
- allow density transfers to adjoining property as an incentive to preserve historic buildings and sites;
- allow mitigation of non-conforming status for historic structures by conditional use approvals; and
- adopt guidelines and/or regulations, where appropriate, to address the issue of teardowns, particularly in older, established lake communities (see the Lake Community Program) and historic downtown areas and residential neighborhoods.

In addition, both municipal and county governments will be encouraged and supported in advocating innovative methods to facilitate historic preservation within their communities, including purchase and use as public historic sites, easements, adaptive reuse, financial incentives and heritage tourism. (Heritage tourism opportunities will be developed as part of the economic vitality program.)

Municipal and county governments shall, as a requirement of conformance, impose a development review condition that all development proposals that may affect historic, archaeological or cultural resources shall demonstrate how such impacts will be avoided or minimized.

Counties shall, as a requirement of Plan Conformance, address historic transportation infrastructure within their county master plan and encourage them to develop a program to preserve the integrity of historic bridges that are part of their transportation system. (See the Transportation Program.)

Education and Outreach

The Highlands Council, in coordination with the State Historic Preservation Office, will develop or adapt a historic preservation manual to provide guidance, technical assistance and information on potential funding sources for use by local government, non-profit and preservation entities. The manual will include strategies for promoting historic, archaeological and cultural resources as part of the economic vitality of the Highlands. It will include design standards to assist communities, landowners and developers in rehabilitation or adaptation of buildings to preserve and enhance their historic qualities. It will offer innovative methods for advocating and publicizing historic preservation efforts, such as historic marker campaigns, local signage programs, awards programs and similar efforts to build awareness for Highlands historic, archaeological and cultural resources. Heritage tourism programs will be promoted as a component of the historic preservation program and the economic vitality of the Highlands. (See heritage tourism opportunities in the Sustainable Economic Development Program.)
## Scenic Resource Protection

### Issue Overview

Protecting scenic resources and maintaining the visual integrity and scenic beauty of noteworthy viewsheds and natural and cultural features of significance in the Highlands Region is a goal of the Highlands Act and the RMP. The essential character of the Highlands is intrinsically tied to the physical environment and how one element relates to another. The scenic character of the Highlands will be a major contributor to the Region’s success as a recreation and tourism destination and its ability to generate economic activity in the form of agri-tourism, eco-tourism and heritage tourism. Preservation of that essential character can best be accomplished through a comprehensive approach to scenic resource protection. Other than a few scenic resource ordinances and even less scenic resource inventories, there has been no comprehensive attempt to address the issue of scenic resource protection in the Highlands Region.

### RMP Policies and Objectives Addressed

**Policy 4B1.** To maintain and periodically update the Highlands Scenic Resources Inventory.

**Policy 4B2.** To provide a process whereby regionally significant resources may be nominated, considered and included in the Highlands Scenic Resources Inventory.

**Policy 4B3.** To ensure that human development does not adversely affect the character or value of resources which are listed on the Highlands Scenic Resources Inventory.

**Policy 4B4.** To establish minimum standards to ensure that Highlands Scenic Resources are not impaired by new human development.

**Policy 4B5.** To require that the impact of proposed human development on the scenic resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval.

**Objective 4B5a.** All development applications shall include identification of any scenic resources in the Highlands Region which are listed on the Highlands Scenic Resources Inventory and may be affected by the proposed development.

**Objective 4B5b.** All development which affects identified scenic resources shall comply with minimum standards for the preservation of the affected resources.

**Policy 4C1.** To require that conforming municipalities and counties include a Historic, Cultural and Scenic Resource Protection Element in municipal and county master plans and development regulations and update the Historic and Cultural Resources Inventory through local development reviews.

**Policy 4C3.** To require that conforming municipalities and counties include minimum standards for the protection and enhancement of scenic resources listed in the Highlands Scenic Inventory in their development regulations.

### Program Summary

The program establishes a procedure for identifying regionally significant scenic resources within the Highlands Region and provides methods to preserve these vistas, byways, ridgelines, cultural landscapes and natural features. The program provides for input from local government entities as well as public participation.

### Inventory of Highlands Scenic Resources

- Baseline Inventory – Having identified 131 potential scenic resources, the Highlands Council will evaluate the initial baseline sites, refine the list and
seek to add to it through additional nominations.

- The Council will establish procedures for nomination, evaluation and inventory of Highlands regionally significant scenic resources.
- The Council will establish guidelines for the preparation of the scenic resource inventory, including modifications to the baseline inventory of 131 potential scenic resources.
- The Council will identify unique scenic vistas (big sky views) and protect them.
- Encourage municipalities and counties to conduct scenic resource inventories and relate them to their recreation and open space planning.
- Encourage municipalities and counties to work jointly with neighboring municipalities and counties to conduct the scenic resource inventories on a regional or sub-regional scale.
- Encourage municipalities and counties to include scenic resources in the open space and recreation plan elements of the municipal and county master plan.

### Scenic Resource Protection Mechanisms

- The Council will develop strategies to protect scenic ridgelines, including the identification of key provisions for a Ridgeline Protection Ordinance. The provisions may include location of buildings, preservation of trees up slope and down slope of structures, building colors and types of glass, and other siting techniques that would blend structures with the landscape.
- The Council will identify key provisions for scenic resource protection ordinances for use and adoption by municipal and county governments, either as part of Plan Conformance or through independent exercise of municipal and county authority.
- The Council will develop review procedures for consideration of scenic resources during Project Review.
- Municipalities and counties shall be encouraged to develop a Scenic Resources Management Plan for their jurisdictions or sub-regions.
- The Highlands Council will prepare a scenic resource protection model ordinance to serve as a template for use by the municipalities in drafting and adopting a local scenic resource protection ordinance.
- The Highlands Council will prepare guidelines to assist municipalities in drafting and implementation of scenic resource protection measures in the community, including scenic lake management.
- Municipalities shall be encouraged to advocate cluster development within rural areas, locating development away from the road, protecting the rural road frontage and maintaining the rural landscape. Where land is in agricultural use, municipalities should retain this use along roads and locate development in locations that do no damage the scenic viewshed. Hedgerows, mature trees and other rural features should be protected.
- Relate scenic resource protection strategies and priorities to the open space and recreation component of the master plan and the expansion of recreation facilities.
- Establish road corridor regulations that protect existing tree rows along roads, and requires minimum buffer yards (e.g., 100 feet) to be left in natural vegetation, not maintained as lawns. Minimum landscape provisions of the buffer established for different types of roadside environments.
Issue Overview

The Highlands regional transportation system uses roads, highways, railways and bridges to move people and goods through various modes of travel, including private automobile, bus, plane, truck, rail, bicycle and walking. In the Highlands, numerous factors including inefficient land use patterns have led to an increased dependence on automobile travel, which has had adverse impacts on natural resources and overall quality of life. By promoting efficient mixed land uses and increasing access to a multimodal transportation system, better protection can be offered to environmentally sensitive areas of the Region.

The Highlands Act emphasizes the preservation and enhancement of the transportation system which integrates transportation and comprehensive land use planning. It emphasizes the promotion of a balanced, efficient and safe transportation system that is consistent with smart growth strategies and principles and which preserves mobility and maintains transportation infrastructure in the Highlands Region. Section 11 of the Act states:

11. a. The regional master plan shall include, but need not necessarily be limited to…
   (5) A transportation component that provides a plan for transportation system preservation, includes all federally mandated projects or programs, and recognizes smart growth strategies and principles. The transportation component shall include projects to promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility and maintains the transportation infrastructure of the Highlands Region. Transportation projects and programs shall be reviewed and approved by the council in consultation with the Department of Transportation prior to inclusion in the transportation component;

An assessment of roadway conditions across the Highlands indicates that many of the Region's roads are at or approaching traffic capacity. Some of the major U.S. and State highways have recurring capacity constraints during the AM and PM peak travel periods. In addition, because mobile source pollution is generated by vehicle emissions, this traffic congestion increases emissions of harmful pollutants and adversely affects air quality.

Transportation Safety and Mobility

RMP Policies and Objectives Addressed

Policy 5A1. To ensure that the Highlands transportation system provides safe and reasonable intra-regional and inter-regional mobility.

Policy 5A2. To ensure that the Highlands transportation system affords the Highlands private economic sector, including agriculture, cost-effective transportation for raw materials, products and employees.

Objective 5A2a. Encourage the movement of goods from the roadway network to the freight rail network wherever possible.

Policy 5A4. To provide for safe pedestrian connections including features such as sidewalks, proper lighting, shade trees and shelters consistent with NJDOT’s Pedestrian Safety Initiative.

Policy 5B2. To require through Plan Conformance and Highlands Project Review an evaluation of potential growth inducing effects such as substantial new land use, new residents, or new employment that could occur as a result of increased capacity road improvements.

Policy 5B3. To prohibit through Plan Conformance and Highlands Project Review road improvements in the Highlands Region in areas for which a Growth
Inducing Study demonstrates that proposed improvements are likely to be growth-inducing for lands with limited or no capacity to support human development without an adverse impact on the Highlands ecosystem.

**Policy 5C1.** To ensure, to the extent practicable, that proposed transportation improvements which are not consistent with the RMP be modified to be consistent or be re-evaluated in the context of state and regional planning goals.

**Policy 5C2.** To coordinate with NJ DOT, NJ Transit, NJTPA (North Jersey Transportation Planning Authority), counties and municipalities with regard to transportation planning and strategies within the Highlands Region.

**Objective 5C2a.** Highlands Region transportation site development activities will reflect RMP resource protection, development and redevelopment goals.

**Policy 5C3.** To limit road improvements through local development review and Highlands Project Review where roads are constrained by topography, forested lands or the community character of land uses fronting on the road.

**Policy 5C4.** To support economic development by ensuring that transportation planning and improvements support regional development, redevelopment, and tourism opportunities.

**Policy 5C5.** To recognize and support the unique needs of the agricultural industry to move farm vehicles and goods along transportation corridors, and establish safe travel routes for farmers in order to ensure the safety and viability of farming as an occupation in the Highlands Region.

**Policy 5C8.** To evaluate the existing and proposed Residential Site Improvement Standards (RSIS) in the context of the RMP and develop recommendations for amendments to minimize environmental impacts and maximize utility efficiency from new residential developments in a context-specific manner.

**Policy 5D1.** To promote the use of mass transit and other alternative modes of transportation within the Highlands Region.

**Objective 5D1b.** Increase overall transit ridership and the use of multi-modal transportation systems for peak hour travel.

**Policy 5D2.** To promote transit improvements within the Highlands Region which primarily support intra-regional mobility.

**Policy 5D3.** To promote priority for transportation improvements which primarily improve intra-regional mobility.

**Policy 5D4.** To promote transit improvements which will increase capacity for inter-regional mobility.

**Policy 5E1.** To promote land use patterns that support a balance of jobs to housing as a means of reducing average trip lengths.

**Policy 5E3.** To promote land use patterns which facilitate use of alternative modes of transportation including walking and the use of bicycles.

**Policy 5E4.** To promote shared parking programs in support of mixed use development and redevelopment.

**Program Summary**

The Highlands Act states that a primary goal is to promote a sound and balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility. The transportation program serves
multiple purposes such as identifying roadway capacity constraints, addressing safety concerns, assessing agricultural and freight needs, and promoting efficient land use patterns which look comprehensively at land use and transportation planning. The program also looks to enhance a multi-modal transportation system which facilitates the movement of people and goods without adversely affecting ecosystem integrity and community character. Each program component addresses a specific need area while providing a set of strategies through which the Highlands Council, in coordination with state agencies, local government units and stakeholders, can ensure that RMP goals are achievable.

**Linking Transportation and Land Use**

This program component discusses the critical relationship between transportation and land use in the Highlands Region, and the necessity to incorporate smart growth principles in transportation improvements in order to protect the environment while encouraging economic viability.

Many of the transportation improvements made in recent decades have been in the form of adding roadway capacity, with the intent of relieving or mitigating traffic congestion. It is widely acknowledged, however, that the strategy of adding roadway capacity is not a sustainable solution to the many problems facing the transportation system. By looking at transportation and land use planning comprehensively, a long-term strategy can be developed to better solve the Region's transportation issues. There are several integrated land use/transportation corridor studies currently underway or planned in the Highlands Region including Interstate 78, Route 57 and Route 23.

The idea of mixing land uses, combining jobs, housing, retail and other uses in a compact, efficient manner, is one approach which can lead to shorter and less frequent trips taken and fewer vehicle miles traveled. These mixed uses, when integrated as a compact, walkable community, can also create and enhance a sense of place and vitality, which may in turn lead to higher property values and lower infrastructure costs. Transit Oriented Development (TOD) is another method that integrates transportation planning specifically by promoting more compact development around existing transportation infrastructure as an alternative to sprawl. Innovative approaches to roadway design can also put greater focus on ecological systems. The NJ Transit Transit Score Program is an approach for evaluating land use and transit supported links by defining a transit score index. The program evaluates the relationship between people, employment and vehicle use as related to land use to improve transit options in local and regional planning.

Green Street approaches seek to design a street system that protects water resources in order to prevent the adverse affects of surface runoff. A concept called “Shared Parking” is used extensively in traditional neighborhood commercial settings and downtowns. In these locations, higher densities and mixed uses often allow people to park in a single spot and then walk from one destination to another, allowing the same parking spaces to be used by various uses.

This program component includes the following:

1. Municipal Plan Conformance includes the development of a circulation plan element in coordination with the land use plan element; it will evaluate local Transit Scores in support of connecting land use to transit services and address smart growth principles consistent with the goals of the RMP.
2. A circulation plan element must show the location and types of facilities for modes of transportation required for the efficient movement of people and goods, as well as a municipal evaluation of transit and shared parking opportunities through a comprehensive parking study.

3. Conforming counties shall develop a transportation plan that supports local and regional land use planning, evaluates regional Transit Scores as a means to screen for improved and innovative transit options, promote connectivity, shared service opportunities and long-term transportation network needs.

4. Council shall evaluate the existing and proposed Residential Site Improvement Standards (RSIS) in the context of the RMP and develop recommendations for amendments to minimize environmental impacts and maximize utility efficiency from new residential developments in a context-specific manner.

5. Coordinate with NJ Transit, counties and municipalities to increase the performance of the public and private bus carrier systems, increasing transit rider-ship and the use of multi-modal transportation systems for peak hour travel.

6. Encourage development and redevelopment which provides a balance of jobs to housing in close proximity to rail and bus.

Regional Transportation Safety and Pedestrian Security

The widespread usage of the Highlands roadway system does not come without certain risks for pedestrians, bicyclists, motorists and bus passengers. Many years of vehicle safety and traffic engineering improvements have resulted in generally safer conditions for automobiles, with fewer fatalities and fewer crashes per vehicle miles traveled. Beyond automobile safety, there has been a growing awareness of the need to protect the most vulnerable road users - pedestrians and bicyclists.

The Act emphasizes the importance of transportation safety and creates certain exemptions which allow for such things as the routine maintenance and reconstruction of transportation infrastructure provided that the activity is consistent with the goals of the Act, and does not result in new through-capacity travel lanes. The challenge of improving safety for all travelers in Highlands Region can best be addressed through strategic and coordinated efforts to integrate safety concerns into transportation planning with State agencies, local governments and stakeholders.

This program component emphasizes the following strategies in order to promote transportation safety:

1. Require municipalities to assess local transportation improvement needs and safety concerns as part of their circulation plan element for Plan Conformance.

2. Coordinate with municipalities, counties, NJDOT, NJTPA and NJ Transit in order to increase safety and security of inter-modal transportation for motorized and non-motorized users, and by implementing traffic calming measures in areas with high pedestrian activity.

3. Promote safe routes for children to travel to and from school in a coordinated effort with NJDOT's Safe Routes to School Program. In addition, encourage safe routes to public transportation through NJDOT's Safe Streets to Transit Program.

4. Provide for safe pedestrian connections including features such as sidewalks, proper lighting, shade trees, and shelters consistent with NJDOT's Pedestrian Initiative.
Transportation mobility is a vital component to the agricultural industry in the Highlands Region, as farmers rely on a functional transportation system in order to operate farms and ultimately bring a variety of goods to market. In order to ensure the safety and viability of farming as an occupation in the Highlands Region, safe travel routes for farmers need to be coordinated with local governments and state agencies.

Mobility is also critical to the needs of a growing freight industry which continues to use the Region's infrastructure to haul goods to and from the State's major ports. However, a growing number of freight trucks are having a negative impact on the Region's roads. By improving upon existing rail infrastructure and shifting from truck to rail for long-distance transport, more freight can be moved safely and efficiently.

The program components include:

1. Coordinate with municipalities, counties, New Jersey Department of Agriculture and NJDOT to identify and support the unique needs of the agricultural industry to move farm vehicles and goods along transportation corridors, and establish safe travel routes for farmers in order to ensure the safety and viability of farming as an occupation in the Highlands Region.

2. Require that all circulation plan elements and county plans, as part of Plan Conformance, evaluate "farm-to-market" opportunities to improve upon the movement of goods from farms and areas of supply to areas where goods are in demand.

3. Require that all circulation plan elements and county plan, as part of Plan Conformance, evaluate opportunities to increase freight service through the reactivation of abandoned freight lines.

4. Coordinate with NJDOT on new Comprehensive Statewide Freight Plan

(For more information on agricultural needs see Agricultural Management and Sustainability Program)

As a Region that reflects history, exhibits scenic beauty, and provides outdoor recreational activities, the Highlands offers residents and visitors a variety of recreational and tourism opportunities. A strong tourism industry in the Highlands depends upon a safe and efficient transportation system.

This component seeks to focus on the relationship between the Highlands transportation system and tourism resources. Are transportation services available so that tourists can travel safely and by a variety of modes? Is information about transportation to tourist attractions and activities available? What are opportunities to expand tourism through transportation-related activities such as rail, bus, hiking trails and signage? By answering these questions, Highlands communities can support enhanced regional economic vitality and contribute to overall quality of life.

This program component includes the following:

1. Coordinate with NJDOT, NJTransit and NJ Division of Travel and Tourism to increase tourism opportunities through innovative multi-modal transportation measures and accessible transit schedules.

2. Support the regional tourism economy in cooperation with NJDOT through a road signage program which identifies significant natural and historic resources and landmarks.

3. Require that circulation plan elements evaluate opportunities to expand
tourism through multi-modal transit connectivity, thus promoting the use of transit as a means to access Highlands' tourism resources.

4. Coordinate with NJDOT and NJ Department of Agriculture to promote agri-tourism through enhanced information sharing, education and outreach.

The review of transportation projects by Council is a critical step to ensuring that transportation improvements are consistent with the goals and policies of the RMP. The Act states that the Council may provide comments and recommendations on any transportation project undertaken by any State entity or local government unit in the Highlands Region. In the Preservation Area, the Council must establish procedures for conducting reviews of projects that, except in certain cases, involve the disturbance of two acres or more of land, or a cumulative increase in impervious surface by one acre or more. The Act also states that the Council has the power to approve, approve with conditions, or disapprove a project, and that except in certain cases no such project can move forward without approval of the Council.

Transportation project review will generally evaluate the following:

1. Consistency with the goals policies and objectives of the RMP and smart growth and sound planning principles.

2. Determination of net effect on through lane capacity, as additional through lane capacity is prohibited in the Preservation Area.

3. Impact on water quantity and quality, and other critical natural resources such as forests, habitat and open waters.

4. Growth-inducing impacts regarding new land use, new residents, and new permanent employment which could have secondary growth implications, or greatly expand transportation infrastructure capacity, especially in areas with high natural resource values and limited capacity to support human development.

5. Use of alternative modes of transportation including transit, bus, pedestrian and bicycle.

6. Safety measures such as traffic calming strategies and pedestrian and bicycle safety features.

7. Impact on agricultural and freight mobility.

8. Effect on eco-tourism, agri-tourism and heritage tourism in the Region.

(Prior to Plan Conformance, guidelines and procedures will be developed in support of transportation project review detailing the specific requirements)

The roadway capacity assessment included in the Transportation Technical Report provides a detailed assessment of roadway conditions, identifying major origin and destination trips generated in the Highlands for the base year 2002. The Council worked with NJDOT, NJTPA and counties to develop a Highlands Sub-Area model based on information developed from a larger model known as the North Jersey Regional Transportation Model (NJRTM). It is currently the primary analysis tool for transportation planning in the Region.

There is a need to re-examine, refine and monitor these roadway conditions and travel patterns, and the impact of future development and land use patterns on traffic conditions. The refined assessment will need to be conducted to a finer Traffic Analysis Zone standard in order to determine more accurately local roadway conditions by municipality in the Highlands Region. This more refined analysis can better reflect the impact of past land use changes in order to inform
future land use decisions, and thereby shape transportation infrastructure improvements. The Council will continue to partner with NJDOT, NJTPA and counties to refine the model for future needs.

(More information on the Roadway Capacity Assessment can be found in the Transportation Technical Report pg.11)

### Part 6. Future Land Use

#### Land Use Capability Analysis Approach

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<td>Section 11.a(6) of the Highlands Act requires that the Highlands Regional Master Plan include:</td>
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> “(6) A smart growth component that includes an assessment, based upon the resource assessment prepared pursuant to paragraph (1) of subsection a. of this section, of opportunities for appropriate development, redevelopment, and economic growth, and a transfer of development rights program which shall include consideration of public investment priorities, infrastructure investments, economic development, revitalization, housing, transportation, energy resources, waste management, recycling, brownfields, and design such as mixed-use, compact design, and transit villages. In preparing this component, the council shall:

(a) prepare a land use capability map;” |

In addition, Section 12 of the Act requires that the Regional Master Plan include:

> “12. In addition to the contents of the regional master plan described in section 11 of this act, the plan shall also include, with respect to the preservation area, a land use capability map and a comprehensive statement of policies for planning and managing the development and use of land in the preservation area, which shall be based upon, comply with, and implement the environmental standards adopted by the Department of Environmental Protection pursuant to sections 33 and 34 of this act, and the resource assessment prepared pursuant to paragraph (1) of subsection a. of section 11 of this act.” |

The land use capability map (LUCM) is not explicitly defined by the Highlands Act, but the Regional Master Plan (RMP) requirements give clear guidance that the LUCM is to provide information sufficient to determine, at a regional scale, the potential for land use based on a variety of factors including existing development, agricultural uses, high quality and contiguous natural areas, utility capacity and environmental constraints. As discussed in Chapter 2 of the RMP, the result is a series of maps (the LUCM Series) that in combination provide this information at a regional scale. These maps are:

1. Land Use Capability Zone Map
2. Land Use Capability Water Availability Map
3. Land Use Capability Public Community Water Systems Map
4. Land Use Capability Domestic Sewerage Facilities Map
5. Land Use Capability Septic System Yield Map

Municipalities engaged in Plan Conformance will need to use the information in the Land Use Capability Map Series to determine at a local scale the land use capabilities for their municipalities. Similarly, counties will need this information in Plan Conformance to update county master plans and development regulations. State agencies, which are required by the Highlands Act to
coordinate their activities using the RMP, will be able to use the LUCM Series to perform a consistency analysis. Lastly, the Highlands Council will also use this information in their petition for State Development and Redevelopment Plan Endorsement, and in the process of Project Reviews and consideration of Petitions for Plan Conformance.

**Policy 2A1.** To identify and periodically update net water availability and water deficits as a factor in the Land Use Capability Water Availability Map.

**Policy 2A2.** To ensure that increasing water demands do not exceed Net Water Availability or exacerbate existing deficits of subwatersheds. Net Water Availability is affected at a subwatershed level by location and extent of Land Use Capability Map Zone Map and its status as Current Deficit Area or Existing Constrained Area.

**Policy 2I2.** To identify water and wastewater infrastructure necessary for appropriate and environmentally-sensitive redevelopment of Highlands Redevelopment Areas in the Preservation Area.

**Policy 2K2.** To base projected demand for appropriate economic revitalization and opportunities for designated Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.

**Objective 2K3d.** Permit cluster development served by existing or expanded wastewater collection and treatment systems in an Agricultural Resource Area only where such development is within or immediately adjacent to an Existing Areas Served and adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes and provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.

**Objective 2K3f.** Cluster development utilizing community-based on-site treatment facilities shall be permitted: (1) where such development is not within an Existing Area Served or adjacent to an Existing Area Served with available capacity, (2) where the system is designed and has capacity only for the cluster development, (3) where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served, (4) where adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes, (5) where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service, and (6) provided that the proposed development is otherwise consistent with the goals and
requirements of the Plan.

**Policy 2K5.** To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review and Highlands Project Review.

**Policy 2L1.** To use nitrate concentrations in ground water as an indicator of water quality, and to use nitrate dilution modeling as the primary method for assessing the carrying capacity of lands for development that relies on septic systems for wastewater treatment.

**Policy 6A1.** To use the Land Use Capability Map Series (LUCM Series) as a geographic framework for land use planning and management within the Highlands Region.

**Objective 6A1a.** A Highlands Land Use Capability Map Series based on the most current and available data.

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**Program Summary**

Because the ultimate determination of land use capability requires a combination of technical and planning analyses, the Highlands Council decided that a series of maps regarding land use capability would provide more understandable information than a single LUCM that incorporates all factors of the LUCM Series. The LUCM Series and supporting data will be used by municipalities and counties during Plan Conformance to determine the local land use capability. For this process, the first analysis requires the examination of the Highlands Council’s data and maps to determine whether any RMP Updates are appropriate based on more current data, factual corrections or new information. The next analysis requires a determination of available capacity based on three separate categories of constraints: developable lands, resources, and utilities. Then, a “limiting factor analysis” will be completed for each area to determine the land use capability available based on the three categories of constraints. In the final analysis at the municipal scale, the municipality will determine if proposed development yields advanced in Plan Conformance will be equal to or less than the land use capability determined in the limiting factor analysis, or whether it will seek to modify the most limiting factors in ways that comport with RMP policies but allow for more development potential. The municipality may address these factors through various approaches, such as eliminating water deficits, or creating additional net water availability through water conservation. Where the municipality proposes changes that would result in changes to the LUCM Series, a Petition for Map Adjustment would be required either as part of Plan Conformance or as a separate petition.

The determination of land use capability is only the first step, though critical, in the process of municipal planning. The second step will be allocation of land use capability among the developable parcels in each LUCM Zone, to minimize the potential for large-scale conflict between zoned densities and environmental constraints. The third step will be subdivision and site plan review to ensure that individual project designs meet RMP project review standards for such issues as Highlands Open Water buffers, steep slopes, etc.

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**Technical and Planning Assistance**

The Highlands Council will provide to each Highlands municipality and county the information developed for the Regional Master Plan and the LUCM Series specifically, as relevant to their jurisdiction, and provide technical and planning assistance that will assist local use of the information. Further technical and
planning assistance will be made available in the form of training programs for local officials, employees and consultants. See the Plan Conformance Program and the Local Participation Program for additional information on this component.

RMP Updates

Subsequent to receipt of the RMP information and assistance regarding its use, municipalities and counties will assist the Council by examining the information used in the LUCM Series and other elements of the RMP and recommending RMP Updates as needed. Of specific interest will be updates on the following information:

- Development or other land use changes that have occurred and development proposals that have been fully approved subsequent to the Land Use Land Cover aerial photography used in the LUCM Series (currently 2002);
- Additional lands preserved for natural resource preservation, parks and recreational open space, historic preservation, farmland preservation, etc.;
- Modifications to stream and flood hazard delineation maps, including both additions and corrections to stream corridor locations;
- Jurisdictional wetlands and transition areas for which NJDEP has provided an updated Letter of Interpretation (LOI);
- Topographic mapping that will enable a more precise delineation of steep slopes;
- Additional NJDEP certified vernal pools, and proposed modifications to vernal pool buffers based on the criteria in the Goals, Policies and Objectives and discussed in the Critical Habitat Conservation and Management Program;
- Modifications to critical habitat boundaries for rare, threatened and endangered wildlife species based on site-specific analyses using methods in Highlands Council guidance;
- Updates and corrections to the Existing Areas Served for both public community water supply systems and public wastewater treatment systems;
- Updates to transportation facilities that significantly alter the opportunity for multi-modal transportation connections and use;
- Updates to water withdrawal, water use, and wastewater discharge volumes and locations that would result in a modification of the Water Availability values for HUC14 subwatersheds affecting the municipality, including information that results in recalculation of consumptive and depletive water uses for any subwatershed. In addition, information may be provided regarding specific contracts or rights to utility capacity by municipality, service area or contracted uses (i.e., committed but unconnected users) that will allow for more specific utility capacity determinations by municipality.

Proposed RMP updates will be verified for accuracy by the Highlands Council and used to determine whether changes in any of the LUCM Series are appropriate. See the RMP Updates and Map Adjustments Program for additional information.

Calculation of Land Use Capability

The Highlands Council will provide updated LUCM Series and technical information to each Highlands municipality and counties as necessary during the Plan Conformance process. Each municipality in the Plan Conformance process shall use the LUCM Series and any supporting tabular and mapped information to determine the land use capabilities within their municipalities at a local scale. Each County in the Plan Conformance process shall also use the LUCM Series and any supporting tabular and mapped information to determine the extent to
which county conformance is affected by the information, such as impacts on county utility authorities, conservation elements of county master plans, etc. Land use capability has three components:

- Land based capacity
- Resource based capacity
- Utility based capacity

**Land based capacity** is determined through an examination of vacant lots, partially developed oversized lots that could be subdivided under existing zoning, and lots that could be viable for redevelopment or intensification of development (which can include those lots identified as potential sites through use of the Highlands Council’s **Redevelopment and Infill Analysis Tool**). This step provides a sense of what lands could be developed given no resource or utility constraints. However, it does not address the actual density of that development, which will be affected in the near term by municipal intentions as expressed in local zoning policies, RMP policies, and current resource and utility constraints, and in the longer term by decisions regarding TDR Receiving Zones, infrastructure investments, the impact of water deficit reduction programs, etc.

**Resource based capacity** is determined through an examination of:

- Septic systems: The number of septic systems, as defined by the RMP, that can be accommodated in each municipality for each Land Use Capability Zone, which will be determined based on developable acreage within each HUC14 subwatershed. Where municipalities coordinate their planning, septic system yield within the same HUC14 subwatershed and Zone may be reallocated based on a mutually agreed upon formula, as long as the results are in conformance with all other RMP policies and objectives;
- Water Availability: The net water availability defined by the RMP for each municipality by HUC14 subwatershed. (Agricultural net water availability for the Conservation Zone may not be combined with the non-agricultural net water availability for that Zone.) Where municipalities coordinate their planning, net water availability within the same HUC14 subwatershed may be reallocated based on a mutually agreed upon formula, as long as the results are in conformance with all other RMP policies and objectives;
- Potential Water Availability: The conditional water availability defined by the RMP for each municipality by HUC14 subwatershed. This water availability is only allowable where a Water Management Plan is developed in Plan Conformance that addresses all RMP policies for deficit reduction and elimination. Where municipalities coordinate their deficit mitigation under a joint Water Management Plan, conditional water availability may be allocated based on a mutually agreed upon formula, as long as the results are in conformance with all other RMP policies and objectives;
- Local issues regarding the ability of local aquifers to sustain water demands, regardless of HUC14 subwatershed estimates. Subwatershed-based net water availability may not reflect variations in aquifer capacity within the subwatershed, nor contamination issues that may limit site-specific water availability. These local issues should be used as additional constraints on the location and density of development.

**Utility based capacity** is determined through an examination of public water supply and wastewater utility capacity by municipality, and where appropriate by service zones (i.e., portions of the overall service area that is served by a single
transmission or collection main or is within a single pressure zone) within each municipality. Service zone analysis may be necessary where constraints in the ability of individual supply mains or collection systems to convey flows will limit development potential even where the utility treatment plant has net capacity. Because many utilities serve more than one town and service agreements differ, the capacity analysis also must address questions of capacity allocation – does a municipality have a guaranteed allocation or is capacity assigned on a “first come, first served” basis regardless of municipality? Finally, the implications of regulatory constraints such as NJPDES permits, TMDLs, water allocation permits, etc. must be addressed.

The next step, determination of **land use capability**, is a “limiting factor analysis” using these three categories of capacity constraints. No one part of municipality will incorporate all types of constraints, because a sewered area will not address septic system yields, and vice versa. In general, however, a municipality should determine for each part of the municipality the type of capacity that is most constraining. The municipality can then directly zone for that capacity, or it may examine alternatives that create capacity as long as the alternatives are otherwise in conformance with the RMP:

- Where land based capacity is the most limiting factor, the municipality may consider modifying zoning to more fully utilize available resource or utility capacities, up to the second most limiting factor. The use of available capacity for TDR Receiving Zones in appropriate locations is one potential approach;
- Where water availability is the most limiting factor, the municipality may increase net water availability, or may develop and implement a Water Management Plan to eliminate an existing deficit and create capacity, through the methods identified in the Water Deficits Program;
- Where septic system yield is the most limiting factor, the municipality may explore extending or creating sewer service areas that provide an alternative to use of septics. (Note: the use of alternative design septic systems cannot be used to modify septic system yields.) New or expanded sewer service areas may not include portions of the Environmentally Constrained Sub-zones of either the Existing Community or Conservation Zones unless the Environmentally Constrained Sub-zone areas are permanently protected from development and are not compromised by the sewered development. New or expanded sewer service areas proposed in the Conservation or Protection Zones must be shown to be necessary for and are approved by the Highlands Council to address a documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, comply with Objectives 2K3d and 2K3f, and will maximize the protection of sensitive environmental resources.
- Where utility capacity is the most limiting factor, the municipality may investigate increasing net utility capacity through water conservation (again, using methods in the Water Use Efficiency or Water Deficits Program) or through public water or wastewater infrastructure improvements.

The results of this technical analysis and planning process will be reflected in the documentation provided by a municipality with its Petition for Plan.
Natural Resource Limitations on Land Use Capability

The process defined above provides the total land use capability for large areas of a municipality or county. Municipalities will then determine how the land use capability will be allocated among developable lands through zoning. Factors that shall be considered include the location, density, quality and relative intensity of sensitive environmental features in the developable lands, to ensure the minimum possible conflict between the allocation of land use capability and the protection of environmental resources (including but not limited to Highlands Open Waters, Riparian Areas, steep slopes, Prime Ground Water Recharge Areas) during the local development review process. The Goals, Policies and Objectives of the RMP and the relevant maps, data layers and tabular data shall be included as part of this process, toward Plan Conformance.

For example, the Environmentally Constrained Sub-zones in both the Existing Community Zone and the Conservation Zone trigger special provisions restricting the extension or provision of public water supply and wastewater management facilities, beyond the general provisions of the Zones themselves. For natural resource protection requirements in all Zones, the Goals, Policies and Objectives require protection of the resources and may require responses ranging from modified layout of development at the zoned densities (where the natural resource constraints are limited relative to lot size and development density), to loss of development yield (where a high level of constrained areas exists on a specific property).

The figure *Site Specific Constraints Analysis* shows a Planning Area example from an Existing Community Zone that has significant developed areas but also some undeveloped or underdeveloped parcels. Site specific constraints on land use primarily include the 300 foot Highlands Open Water buffer, steep slopes and Tiers 1, 2 and 3 of a Wellhead Protection Area. In some cases, the developable lands are not affected by any of these constraints. In other cases, parcels are entirely or partially within one or more constraints. Tier 3 of a Wellhead Protection Area does not limit development capacity, but rather ensures that any potential discharges of hazardous materials are prevented. New development must be designed to protect the entire Highlands Open Water buffer, but redevelopment of already disturbed lands may be allowed within the buffer to a certain extent. New development must also avoid steep slopes. (See *Project Review Standards Program* for more details on specific standards.) Using the example area, one potential development solution for properties affected by the Highlands Open Water buffer and steep slopes would be clustering of zoned development yield onto the unconstrained portions of the affected properties. The result need not reduce the total development yield, but must include a significant movement of that yield away from the constrained area.

RMP Map Adjustments

Where municipal or county conformance planning results in a proposal for changes to the LUCM Series other than RMP Updates, the municipality must submit a Petition for Map Adjustment either separately or as part of the Petition for Plan Conformance. The *RMP Updates and Map Adjustments Program* provides additional information on the limitations and policies for map adjustments.
Site Specific Constraints Analysis

Legend
- Stream
- Highlands Open Water Buffer
- Riparian Area
- Prime Ground Water Recharge Area
- Well Head Protection Areas
  - 2-Year Tier
  - 5-Year Tier
  - 12-Year Tier
- Slope
  - Greater Than 10%
  - Greater Than 15%
  - Greater Than 20%

Site Specific Constraints Analysis

Sources:
- New Jersey Highlands Council, 2006
- New Jersey Department of Environmental Protection, 2006
- New Jersey Water Supply Authority, 2006
- Natural Resources Conservation Service, 2006

Highlands Regional Master Plan
Final Draft, November 2007
Cluster Development

Issue Overview
Conventional or Euclidian zoning relies on a minimum lot area and frontage to control density. The conventional zoning design results in the entire property being divided into streets and lots and, more recently, some land for detention/retention basins for stormwater management. It is often referred to as “cookie cutter” zoning because the lot or cookie forces the developer set up lots just as one would stamp cookies out of dough. It does not allow flexibility to protect sensitive or critical areas while also promoting sensible growth. Any land that is left undeveloped to protect the environment results in a loss in development potential – a double negative as density declines and street length per dwelling unit increases. Most communities have relied on larger lot sizes to attempt to encourage environmental protection. However, even reduced growth can be harmful if it is forced to follow a rigid system. The reliance on septic systems combined with large lots is especially prone to fragmentation of habitats and other environmental resources.

One of the key objectives of the Highlands Act is to minimize the impact of human development on the Highlands ecosystem. In this context, clustering is a basic land management tool whereby new growth and development is guided away from lands with high resource value or limited capacity to support human development to locations which are most appropriate for development. The concept of clustering is not intended to increase development beyond levels that are sustainable given natural resource objectives of the Highlands Act, but rather to minimize the impact of sustainable development.

Clustering comes in two basic forms: 1) clustering where development is transferred from parcels which are not appropriate or best suited for development to other parcels which are appropriate for development, a concept usually implemented through either transferable development rights (“TDRs”) or noncontiguous clustering; and 2) concentrating development in a discrete portion or portions of a development site and preserving the balance of the site in its natural condition. Both techniques are key aspects of the RMP. In the context of this program, “clustering” is used to mean both “cluster development” using the Municipal Land Use Law definition, where the open space preserved through the clustering must be retained in ownership by a homeowners association or deeded to the municipality, and other methods of clustering such as lot-size averaging or Open Lands Ratio where the open space can be privately owned but deed restricted. In cluster development, the land may be leased by the homeowners association or municipality to a farmer for purposes of agriculture, used for community-based agriculture (e.g., communal gardens), or kept in open space. In other forms of clustering, the largest lot may be retained for agriculture or open space by the original owner, sold for farming, or dedicated as open space, all with deed restrictions to prevent further subdivision or development.

RMP Policies and Objectives Addressed

Objective 2B9e. Give highest priority for the use of Net Water Availability for non-agricultural water uses to clustered or compact development, Highlands Redevelopment Areas as designated by the Highlands Council, and Receiving Zones that result in the preservation of agricultural and environmentally sensitive lands.

Objective 2J4b. Accommodate compact development served by existing or proposed public water systems only where such development is within or
immediately adjacent to an existing service area and provides for the clustering or aggregation of development that will preserve at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes and the development impacts are otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.

Objective 2K3d. Permit cluster development served by existing or expanded wastewater collection and treatment systems in an Agricultural Resource Area only where such development is within or immediately adjacent to an Existing Areas Served and adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes and provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.

Objective 2K3f. Cluster development utilizing community-based on-site treatment facilities shall be permitted: (1) where such development is not within an Existing Area Served or adjacent to an Existing Area Served with available capacity, (2) where the system is designed and has capacity only for the cluster development, (3) where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served, (4) where adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes, (5) where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service, and (6) provided that the proposed development is otherwise consistent with the goals and requirements of the Plan.

Objective 2L2e. New residential development using septic systems where lot-size averaging, clustering or open space subdivision design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the LUCM Zone, but with the density for the developed portion of the site based on a nitrate dilution target not to exceed 10 mg/L or any more stringent requirement as required by N.J.A.C. 7:15.

Objective 3A10c. Implement regulations which require mandatory clustering for residential development in an Agricultural Resource Area with adequate provision for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes provided that the proposed development is otherwise consistent with the goals and requirements
Objective 3A10d. Implementation of regulations which require that all land preserved as farmland or natural resource area as a result of clustering be subject to a conservation easement enforceable by the appropriate municipality and the Highlands Council.

Policy 3C2. To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a Agricultural Resource Area in a Conservation Zone, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or mandatory cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of agricultural lands within the Agricultural Resource Area.

Objective 6B1e. Prevent the extension or creation of water and wastewater utility services in environmentally constrained sub-zones, unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.

Policy 6D3. To encourage owners of lands which are eligible for exemptions under the Highlands Act to voluntarily offer their land for acquisition, participate in the TDR program, or engage in contiguous or non-contiguous clustering in cooperation with other exempt landowners, and comply with standards and criteria which protect the land and water resources of the Highlands Region from any adverse impacts.

Objective 6G1b. Municipal and county master plans and land development regulations which require clustering or lot-averaging of non-agricultural development with a minimum of 80% of the property dedicated to agriculture and natural resources protection in order to avoid adverse impacts on agricultural uses and natural resources.

Objective 6N1c. Flexible site development review programs, including reduction of minimum setbacks, modification of uniform road frontage requirements, increase in maximum permitted height or allowing non-contiguous clustering of development entitlements where necessary to mitigate or eliminate adverse impacts on Highlands natural resources.

Objective 7G1b. Establish municipal clustering programs which allow landowners whose property is entitled to an exemption under the Highlands Act, for both contiguous and non-contiguous properties, to minimize the impact of such exempted development on the ecological integrity of the Highlands Region.
Program Summary

The use of clustering for new development, and particularly residential development, is a key mechanism for development siting that can reduce the environmental impacts of development and minimize the potential for conflict between the development and neighboring agricultural activities. Clustering is guided by somewhat different policies in the Protection, Conservation and Existing Community Zone, and especially within the Environmentally Constrained Sub-zones of the latter two Zones. Clustering is mandatory in the Agricultural Resource Area in both the Protection and Conservation Zones. Further, while clustering is a useful technique, its application on a project by project basis is not the best approach because an ad hoc approach can result in scattered clusters that do not provide for a sense of community, planned landscapes or efficient use of land. Therefore, municipalities will be encouraged and supported in the development of clustering plans that predetermine the best locations for clustered residential development that minimizes the number of total clusters, optimizes the use of utility and transportation infrastructure, improves the cost-effectiveness of land uses, and minimizes the potential for environmental impacts and landscape disruption.

Clustering does not have a specific targeted lot size for the resulting lots, because each project will have different environmental, road frontage and utility constraints. Clustering in the Protection and Conservation Zones must achieve a dedicated, deed restricted open space (for agricultural or natural resource preservation purposes) of 80% of the total property. Clustering also does not have a specific mandatory layout. However, to minimize the creation of new roads and the fragmenting of natural ecosystems and resources, most cluster development will not actually result in the aggregation of all development into a corner of a property, which tends to also create internal lots that lack environmental amenities; more common will be “open space subdivision” layouts where existing road frontage (with appropriate buffering) is used where possible, followed by use of single-load internal roads that allow for maximum open space viewing from the homes but also place the homes at a distance from sensitive environmental features or agricultural uses.

Cluster Development

General Provisions

Some aspects of cluster development apply regardless of the LUCM Zone. Municipalities shall include provisions for clustering based on general provisions including, but not limited to, the following:

- The total area of all building sites in a cluster development shall not exceed 20 percent of the parcel proposed for development. Where feasible based on septic system densities, availability of public utilities and site constraints, the use of more compact clustering to 90 percent or higher open space shall be encouraged for preservation of agriculture or natural resources. In the Existing Community Zone, where clustering to 20 percent of the site is not feasible based on septic system density requirements, clustering shall occur on public wastewater systems or site layout shall use lot size averaging or open space ratios to maximize the protection of open space in lieu of clustering.

- Where any parcel of land proposed for clustered development is owned in common with any contiguous parcels of land, the contiguous parcels of land shall be aggregated as if they were a single parcel of land and shall be developed as a cluster development whereby all the parcels of land will be
developed as a single cluster development.

- All development shall be clustered on the portion of a parcel of land proposed for development which has the lowest relative level of natural resource value and minimizes the creation of impervious surfaces and the fragmentation of natural habitats, environmental resources, and continuing agricultural lands, and avoid the creation of awkward or odd-shaped parcels for the remaining open spaces.

- The number of dwelling units in a cluster development shall be limited to the yield of the parcel proposed for development, if developed without use of clustering unless the use of Highlands Development Credits (HDCs) or other transfer of density is involved.

- In determining which portion of a parcel of land proposed for development has the lowest level of natural resource value, due consideration shall be given to access to and from the parcel proposed for development and the public road network, as well as potential linkages with existing developed land patterns and community facilities.

- Access roads to the building sites shall avoid lands used for continuing agricultural purposes and high value natural resources to the maximum extent possible.

- Cluster development using septic systems must meet a nitrate dilution model target of no more than 10 mg/L nitrates for the developed area.

- Cluster development using community or public wastewater and water supply services must meet the policies stated above regarding proximity to existing areas served or restrictions on the size and expansion potential of cluster development with their own water and wastewater services. In the latter case, approval of the cluster shall only occur where binding and enforceable controls exist to prevent secondary growth based on the cluster infrastructure.

- In determining the relative level of natural resources value for a parcel of land, the presence of Forest Resources Areas, Critical Habitat Areas, Moderately and Severely Constrained Steep Slopes Areas, Prime Ground Water Recharge Areas and Highlands Open Waters and Riparian Areas shall be considered to be high value natural resources.

- If the cluster development is located so as to be an extension of an existing village or hamlet, the setbacks or buffers from roads shall conform to the pattern of the existing community rather than the minimums of the districts above; the setbacks or buffers required for the protection of environmental constraints including but not limited to wetlands and Highlands Open Waters shall still apply.

Cluster Development in the Protection Zone

The use of clustering in the Protection Zone will be constrained by the highly sensitive ecosystems in this Zone, by the low allowable densities for development based on septic systems, and by limited water availability. For this reason, clustering in the Protection Zone must be carefully planned and controlled. Municipalities with lands in the Protection Zone shall include provisions for clustering based on provisions including, but not limited to, the following:

- The portion of the parcel proposed for development which is not developed as buildings sites shall be preserved in perpetuity as open space for natural resource preservation.

- Clustering is mandatory for residential development within the Agricultural Resource Area.
### Cluster Development in the Conservation Zone

The use of clustering in the Conservation Zone is strongly encouraged for the protection of agricultural lands and high value natural resources, and is mandatory for residential development within the Agricultural Resource Area. Due to the potential for conflicts between clustered development and agriculture in this Zone, clustering in the Conservation Zone must be carefully planned. Where feasible, clustering sites should be planned prior to site-specific development proposals, to minimize the total number of clusters (see Municipal Cluster Development Plans, below). Municipalities with lands in the Conservation Zone shall include provisions for clustering based on provisions including, but not limited to, the following:

- In determining the relative level of natural resources value for a parcel of land, the presence of Prime Soils and lands used for active agriculture shall be considered to be high value resources in addition to those natural resources listed under Cluster Development General Provisions.
- The agricultural use shall be required to use best management practices to the farm to reduce nutrient and chemical loading rates.
- The portion of the parcel proposed for development which is not developed as buildings sites shall be preserved in perpetuity for use in Highlands agriculture uses or natural resource preservation, including notice within the deed of easement regarding the applicability of Right to Farm Act provisions.
- The standards and criteria applicable to cluster development may be adjusted during Plan Conformance, provided that the Highlands Council finds that the adjustments are consistent with the goals, policies and objectives of the RMP and that the adjustments provide comparable protection for the Highlands ecosystem.

### Cluster Development in the Existing Community Zone

Most development in the Existing Community Zone will consist of compact development using public water supply and wastewater utilities. This Zone has fewer environmental features, most of which will be addressed through buffer requirements. However, there may be opportunities for clustering on sites that have a larger than normal incidence of high value natural resource features. Municipalities in the Existing Community Zone shall include provisions for clustering based on provisions including, but not limited to, the following:

- The portion of the parcel proposed for development which is not developed as buildings sites shall be preserved in perpetuity as open space.
- The standards and criteria applicable to cluster development may be adjusted during Plan Conformance, provided that the Highlands Council finds that the adjustments are consistent with the goals, policies and objectives of the RMP and that the adjustments provide comparable protection for the Highlands ecosystem.

### Protection of Natural Landscape

In all Highlands zones, the protection of natural vegetation shall be regulated to require resource protection and minimize the areas of lawn and reduce non-point loadings associated with lawns. The natural areas preserved close to homes are intended to enhance the value or the property as well as protecting the environment.

### Setbacks from Road

All development in cluster developments shall be setback from existing roads to maintain the Highlands character.

- Protection Zone. A minimum of one hundred feet of undisturbed forest
shall be required before lots begin. Where wetlands or other open field landscape exists next to the road the first 50 feet of forest after the open land shall be preserved as forest.

- Conservation Zone. The cluster should be located behind a tree row or otherwise screened from the view from the road or seen in the background. Where this is not feasible, a landscaped buffer of 100 feet shall be required. Where practical, this should contain a berm. The buffer shall be landscaped leveling such a manner that it returns to a forested condition.

- Environmentally Constrained Sub-zones. In the Conservation or Existing Community Zones of this type the Protection Zone standards shall be applied.

- Existing Community Zone. A 100 foot buffer shall be required along all roads. Where existing tree rows or forests exist these shall be retained. Such buffers shall be landscaped and maintained as a natural area with no mowing.

### Municipal Cluster Development Plans

As discussed above, *ad hoc* clustering, while beneficial for protecting natural and agricultural resources on each development project site, does not necessarily yield a community layout and design that provides for the highest community and environmental values. Therefore, the Highlands Council will provide grants, technical assistance and planning assistance to municipalities for the planning of clustering for their municipality. Projects involving cooperative planning by neighboring municipalities will be encouraged. The purpose of each planning grant will be to:

- Identify the high value natural resources (including agricultural resources in the Conservation Zone) to be protected

- Identify community infrastructure, including but not limited to transportation, schools, public facilities and parks, that can provide capacity to and benefits for clustered development. Identify preferred locations for clustering that will minimize the disruption of the municipality’s natural and agricultural resources, maximize the creation of compact communities using smart growth principles, maximize the connection between existing community resources and the new development clusters, and maximize cost-effectiveness in the provision of community services and infrastructure

- Identify State, county and municipal planning and regulatory mechanisms to ensure that clustering within the municipality achieves maximum consistency with the preferred locations for clustering as established by the plan

- Identify resource needs for implementation of the clustering plan

### Developed Area of the Cluster

The developed area should include all amenities and essential improvements associated with the development. However, there are some exceptions to this that can enhance the value of the development without lowering the value of the cluster in meeting the preservation goals. For example, land treatment systems for waste disposal can provide nutrients to agriculture that can enhance productivity and cut the level of fertilizers that need to be applied. Similarly where stormwater management is feasible using natural site features such as overland runoff, the preserved areas may be used in this manner; engineering stormwater facilities may not be located in preserved areas. Pedestrian trails should also be exempt, provided that they do not disturb nesting habitats for threatened and endangered species. Agricultural use may include traditional agriculture, community supported agriculture businesses, and community garden plots for the home owners, all of which should be considered agricultural open
space. The Council shall develop a handbook to promote environmentally sensitive design to refine the notion of developed land to exclude desirable environmental design from the developed area restraints.

**Modification of Standards for Cluster Design**

An important reason for clustering is that it provides a means for superior design that can do a better job of protecting the environment. The Highlands Council shall emphasize resource preservation and design quality over the specific standards discussed above in reviewing implementing cluster ordinances submitted by the municipalities. Where those regulations enhance the ability of a developer to meet the goals of the Highlands, the Council shall allow for that enhanced program and approve municipal regulations that better meet the objectives of the RMP. This approach does not apply to the review and approval of individual development proposals. If a developer proposes something that is truly superior in meeting the objectives of the RMP, but is not permitted by the municipal regulations, the remedy should be through modification of the municipal regulations subject to review and approval by the Council under Plan Conformance.

**Redevelopment**

**Issue Overview**

The Regional Master Plan strives to accommodate regional growth and development needs primarily through the reuse and redevelopment of previously developed areas, including brownfields, grayfields, and underutilized sites. These areas generally have access to existing utility and transportation infrastructure and often are located in or near existing communities. As they have already been developed, these sites will have comparably fewer environmental constraints than undeveloped areas and the reuse of developed lands conserves natural resources and maximizes infrastructure investments. However, not all such sites are in locations conducive to redevelopment, especially where redevelopment could harm surrounding environmentally sensitive resources.

Redevelopment is a strategy to achieve sustainable development in the Highlands. However, redevelopment projects may face more hurdles than the development of greenfields (undeveloped land). Complicating factors may include project financing, ownership and title issues, the regulatory process, legal requirements, remediation, and the demolition/adaptive reuse and rebuilding of land improvements. For this reason, the Highlands Council strives to maximize opportunities for redevelopment in appropriate locations by serving as an advocate for redevelopment in the Highlands Region and by providing technical resources and tools, planning assistance, and agency coordination to municipalities, counties, land owners, and non-profit organizations who are interested in pursuing redevelopment.

**RMP Policies and Objectives Addressed**

**Policy 6K1.** To encourage redevelopment of brownfields, grayfields and other previously developed areas in a manner consistent with the goals, and requirements of the Plan.

**Objective 6K1a.** Establish a Highlands Interagency Team to support and expedite redevelopment and development activities that conform to the Plan.

**Objective 6K1b.** Encourage and support the use of planning and financing tools that are available through state agencies and programs.

**Policy 6K2.** To maintain a Developed Land Inventory to encourage
opportunities for land development, redevelopment and economic growth, where appropriate.

**Objective 6K2a.** A parcel based inventory of lands in the Highlands Region that are developed, vacant (adjacent to developed), economically underutilized, oversized residential lots, and contaminated sites, to serve as a tool for identifying and marketing sites.

**Policy 6M1.** Encourage and support the restoration and redevelopment or open space use of contaminated areas.

**Objective 6M1a.** Any restoration of contaminated sites will be conducted in accordance with the criteria required by the NJDEP’s technical requirements for site remediation (N.J.A.C. 7:26E).

**Objective 6M1b.** Coordinate with NJDEP on Highlands Brownfield designations and in support of a mechanism that facilitates remedial activities within the Highlands Region.

**Objective 6M1c.** Evaluate mechanisms for remedial activities that apply resource protection, enhancement, and restoration approaches that allow for a minimal redevelopment footprint, encourage “brownfields to greenfields” approaches, and include green energy and building concepts.

**Objective 6M1d.** Determine if enhanced standards for remediation activities will be required to achieve both resource protection goals and remedial requirements for Highlands Resources. Enhance interagency coordination regarding the evaluation of site design and development for contaminated properties in support of RMP policies.

**Program Summary**

The Redevelopment Program helps interested parties, municipalities, counties, state, and federal agencies understand where redevelopment opportunities are targeted by the RMP, and how to achieve redevelopment within each RMP zone and in the Planning and Preservation Areas. The program also outlines incentives and technical assistance that will be provided by the Highlands Council. Redevelopment is a tool that will help achieve residential, retail, service, office, and industrial needs and achieve general economic sustainability in the Region.

Redevelopment in the Highlands is a process used to rebuild, restore, or enhance a previously developed area that is appropriate for economic investment and community development in accordance with the smart growth component of the RMP. Redevelopment activities may include the removal and replacement, adaptive reuse or infill of structures within areas which are surrounded by development or substantially developed, or conversion of similar sites to open space uses where appropriate. Redevelopment activities may take place in previously developed areas, brownfields, and grayfields.

Grayfield sites usually contain industrial or commercial facilities, exhibiting signs of abandonment or underutilization in areas with existing infrastructure, but without evidence or expectation of contamination. Grayfield sites may also include a residential component. These areas are often declining and underutilized strip shopping areas. In the Preservation Area, previously developed areas must have 70% or greater impervious surfaces to be considered for approval by the Highlands Council as Redevelopment Sites.

Brownfield sites are defined as any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been or there
is suspected to have been a discharge of contaminant. In many cases, brownfield restoration and redevelopment ends with new development. In some cases, it may be more appropriate to consider a “brownfield to greenfield” conversion, which is a project that results in the restoration of contaminated sites into open space and conservation projects, rather than residential or commercial structures. It is also important that remediation standards and practices ensure that Highlands resources are protected.

In New Jersey, the phrase “area in need of redevelopment” refers to a different process established through the Local Redevelopment and Housing Law (“LRHL”), N.J.S.A. 40A:12A-1 et seq.. This law establishes the process by which municipalities commence redevelopment as a public purpose. While the Highlands Act and the RMP refer to “redevelopment” activities, the term in this context is not intended to, nor should it be interpreted to indicate the redevelopment process pursuant to the LRHL. Depending upon the nature of the project, municipalities may decide to utilize the process established by LRHL or may find that it is not necessary.

In the Preservation Area, land development is required to be in accordance with the enhanced environmental standards of the Highlands Rules (N.J.A.C 7:38-6.6) adopted by NJDEP. NJDEP grants waivers from the Highlands rules on a case-by-case basis for several scenarios, including redevelopment in previously developed areas and brownfields. In order to qualify for a waiver from the Highlands Rules, a proposed redevelopment site must be designated as appropriate for development by the Highlands Council. Only those projects that satisfy both Highlands Council's redevelopment criteria and NJDEP's waiver criteria may be approved.

Renewed Site Approval - In order to initiate redevelopment activities on previously developed lands with 70% impervious surfaces in the Preservation Area, the general process is as follows:

1. The Highlands Council must approve the designation of a redevelopment site, which must have at least 70% impervious coverage and be appropriate for redevelopment. This approval process is called the Highlands Redevelopment Site Approval Process and can be initiated by any county, municipality, property owner, or designated agent. The Highlands Redevelopment Site Approval Process results in an approval, an approval with conditions, or the denial of an application requesting designation of a Highlands Redevelopment Area. In cases where the Highlands Council determines that a proposed Highlands Redevelopment Area is appropriate for redevelopment, the final determination may include specific conditions to restrict any activities on the site.

2. The NJDEP must review the proposed redevelopment project and issue a Highlands Preservation Area Approval (“HPAA”) with waiver if all necessary requirements are satisfied. A HPAA is a permit to conduct regulated activities in the Perseveration Area and includes a review of the project to determine that it is compliant with all provisions of the Highlands Act.

Brownfields Redevelopment Site Approval - Redevelopment of a brownfield site requires a three step process:

1. A site must be designated by the NJDEP as a Highlands brownfield. In accordance with N.J.A.C. 7:38-6.6, there are three tracks under which a site
may be designated as a Highlands Brownfield, provided that the contamination onsite is not the result of a current or previous agricultural use:

- Track One addresses sanitary landfill sites;
- Track Two addresses former or current commercial or industrial sites for which:
  i. Prior to the issuance of a No Further Action (NFA) letter, a remedial action report was completed confirming the presence of contamination onsite, and documenting the current or previous use as a commercial or industrial site;
  ii. The NJDEP has issued an NFA letter for the entire site for which the brownfield designation is sought as of July 1, 1993, or later; and
  iii. No discharge of a contaminant has occurred on the site since the date of the NFA letter.
- Track Three addresses former or current commercial or industrial sites with suspected or confirmed onsite contamination that have not yet received a No Further Action letter.
- In order to receive a brownfields designation from the NJDEP, a Highlands Resource Area Determination (“HRAD”) must be completed. An HRAD identifies and/or verifies the location of any Highlands resource area features. The HRAD is not a permit, but rather a process intended to confirm the presence, absence, or location of a Highlands resource area on a site as well as its boundary. On-site remediation may begin, where appropriate, and it must be conducted in accordance with the NJDEP’s Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

2. The Highlands Council must identify a brownfield location as appropriate for redevelopment, through the Highlands Redevelopment Site Approval Process.

3. Finally, the NJDEP reviews the proposed redevelopment project and grants a Highlands Preservation Area Approval (“HPAA”) with waiver if all necessary requirements are satisfied.

For further program details, refer to the Highlands Redevelopment Site Approval Process and N.J.A.C. 7:38. (see figures Potentially Contaminated Sites Highlands Tier 1 and Potentially Contaminated Sites Highlands Tier 2)

In the Planning Area, redevelopment opportunities exist in accordance with the RMP overlay zone where the proposed project is located. In the Existing Community Zone, opportunities include all previously developed lands, brownfields, and grayfields in locations with water, wastewater, and transportation capacity and are appropriate for increased land use intensity or conversion to greenfields. Redevelopment is encouraged where appropriate in the Existing Community Zone. Infringement on environmentally sensitive areas will be limited through application of RMP policies.

In the Existing Community Zone, conforming municipalities initiating redevelopment activities in accordance with the RMP and their conforming plans and ordinances do not require any specific approval from the Highlands Council; however, activities may be subject to call-up project review if they do not adhere to the RMP policies. Where a conforming municipality proposes a redevelopment that is not in conformance with the RMP, the municipality must
Potentially Contaminated Sites: Highlands Tier 1 Sites

Legend
Potential Contaminated Sites
- Highlands Tier 1 Sites
Roadway Network
- Interstate Highways
Administrative Boundaries
- County Boundaries
- Municipal Boundaries
Highlands Boundaries
- Highlands Planning Area
- Highlands Preservation Area

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
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petition the Highlands Council for a Plan Conformance modification.

In the Conservation and Protection Zones, redevelopment activities are permitted when they meet the Preservation Area redevelopment criteria (e.g., Redevelopment Sites or Brownfield Sites), or are grayfield sites in locations with water, wastewater, and transportation capacity and are appropriate for increased land use intensity or conversion to greenfields. In the Conservation and Protection Zone, Highlands Council approval of a site(s) is required, and approval may be granted as part of the Conformance process or in accordance with the Highlands Redevelopment Site Approval Process.

Redevelopment and Infill Analysis Tool

The Redevelopment and Infill Analysis Tool identifies parcels that are developed, vacant (adjacent to developed), economically underutilized, oversized residential lots, and sites with existing local conditions such as designated redevelopment areas, urban enterprise zones, foreign trade zones and Centers designated in accordance with the State Development and Redevelopment Plan. Parcels are evaluated in relation to regional transportation and transit opportunities. The Redevelopment and Infill Analysis Tool scores identified parcels based on relative redevelopment and infill potential (see figure Redevelopment and Infill Analysis Tool) and is meant to serve as a tool to assist in long-term planning evaluations and in support of local housing and development.

The information developed by the Council represents a rough estimate of development potential. Not all of the identified parcels will necessarily be appropriate for redevelopment; local and regional policy constraints, environmental constraints, land character, market conditions, and water and utility capacity constraints all will affect a site’s ability for redevelopment.

The Redevelopment and Infill Analysis Tool informs the Developed Lands Inventory and will be maintained and updated as necessary by the Council through Plan Conformance, RMP Updates and Map Adjustments (see RMP Updates and Map Adjustments Program), as well as in support of Council Project reviews. During Plan Conformance, municipalities and counties are required to review and comment on the information, and suggest additions and deletions as necessary.

Redevelopment Site Design Standards

The Highlands Council will provide site development standards for all projects, including redevelopment projects. Site standards will guide and control development and redevelopment in the Region and are intended to provide protection of natural resources, environmentally sensitive areas, open space and agricultural lands, and to enhance and reflect community character. This will be achieved in part by providing flexibility for site requirements that are incompatible with smart growth principles. Examples of flexibility include the reduction of minimum setbacks, the modification of uniform road frontage requirements, and the increase in maximum permitted height.

The Highlands Council will develop redevelopment site design standards that contain the following provisions to create an incentive to redevelop and to use Highlands Development Credits (HDCs) in the process. The following are example site design standards that should be incorporated into zoning and subdivisions regulations to promote redevelopment.

- Shared parking regulations and reduced parking requirements for mixed use, transit oriented development or central business area developments;
Redevelopment and Infill Analysis Tool

Legend

Redevelopment and Infill Potential

- Score 1
- Score 2
- Score 3
- Score 4
- Score 5
- Resource Constraints

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2007
• Mixed uses and broader permissible use standards that support and promote more vital communities;
• Adequate public facilities and improvement of existing facilities to support development and redevelopment. In particular improvement of stormwater systems to promote better water quality is needed;
• Innovative uses such as live-work communities;
• Streetscape design guidelines that provide for the shading of streets with street trees and sidewalk environments that are attractive and safe to use;
• Pedestrian friendly design that enhances walkability;
• Eliminate the non-conforming status of buildings and uses that are positively contributing to the character and quality of the redevelopment areas by giving them conditional approvals that eliminate their non-conforming status;
• Design standards that protect the traditional character of the redevelopment areas to ensure the Highlands character is not compromised. A community character assessment of all improvement projects is needed to insure they respect the traditional character of redevelopment areas; and
• Transportation elements that maintain narrower streets and prohibit road improvements that cause the widening of roads and loss of community character.

Refer to the Highlands Smart Growth Manual Program and Community Development Design Guidebook Program for additional information.

General Assistance for Eligible Projects – Agency Coordination

The Highlands Council will seek to streamline the redevelopment process by establishing a Highlands Interagency Team to support and expedite redevelopment and development activities that are consistent with RMP policies. The Highlands Interagency Team will assist municipalities, counties, and interested parties in redevelopment initiatives that restore and enhance natural features and enhance the built environment. The Interagency Team will be comprised of relevant state agencies who will informally review projects with a problem-solving approach.

Agency coordination will also be required to evaluate the need for enhanced standards for remediation activities. The evaluation of site design and development for contaminated properties will require interagency coordination and will continue to be refined in support of RMP policies.

General Assistance for Eligible Projects – Technical Assistance

The Council will also provide technical assistance in the overall redevelopment process. Technical assistance and support is available for the following activities:
• Technical assistance with the Highlands Redevelopment Site Approval Process;
• Technical assistance with economic improvement issues through the Sustainable Economic Development Program, which covers available programs which enhance economic health and vitality of the Highlands Region;
• GIS data, including but not limited to: RMP and municipal zoning, parcel layer data, Highlands natural resource location, open space, water resources, utilities, and impervious surfaces;
• Information for those looking to acquire funding through existing resources. Currently, state and federal agency programs offer a variety of grant, loan, and technical assistance programs for the planning and implementation of development and redevelopment projects. While available programs and
technical assistance may change over time, examples of programs and technical assistance that may be useful for a project in the Highlands Region include;

- New Jersey Office of Smart Growth’s smart future planning grant program, which offers planning grants to municipalities, counties and non-profit agencies;
- New Jersey Economic Development Authority’s real estate development programs and bond financing;
- NJ Economic Development Authority and the NJDEP administer the Hazardous Discharge Site Remediation loan and grant programs, which awards funds for the investigation and remediation work on contaminated sites;
- New Jersey Environmental Infrastructure Trust’s low-cost financing for projects (including brownfield remediation) that protect and improve water resources; and
- Natural Resource Damages Liability Protection for Developers provides liability protection for non-responsible developers against natural resource damage claims.

The following describes several incentive based program elements that will help to support redevelopment projects; including those that incorporate transit oriented development and Transfer of Development Rights Programs.

- Expedited project review by the Highlands Council for redevelopment projects that incorporate HDCs and affordable housing;
- Relaxation of rigid design standards for projects that incorporate HDCs, affordable housing, mixed use, and redevelopment. Too often rigid regulations restrict the designer’s ability to achieve desirable planning goals.
- Discretionary planning grant program:
  - Highlands Council discretionary planning grants are intended to support important elements of the RMP through planning studies on targeted issues. The grant program serves as a mechanism to implement the goals and policies of the RMP. Sample projects that may be eligible include:
    o Planning for brownfield and grayfield redevelopment;
    o Town center/transit village development;
    o Transit oriented development;
    o Transfer of development rights;
    o Enhancement of environmental resources through redevelopment;
    o Community design; and
    o Local and regional economic development strategies.

The Plan Conformance Program contains information on Highlands Council funding opportunities relating to the implementation of the RMP.

The Highlands Council will support education and technical training programs for municipal officials and interested organizations for innovative/alternative development and redevelopment initiatives. These programs will support stakeholder understanding of balancing resource protection/restoration with redevelopment initiatives that contribute to making communities of place with a mix of uses. (See Local Participation Program for further details.)
Housing and Community Facilities

**Issue Overview**

Housing is a major component of the land use patterns in the Highlands Region. The goals and policies of the RMP seek to address a full range of housing needs for the Region within the context of resource protection needs and sustainable development patterns. Housing costs in the Highlands, as across the State, continue to reflect the trend of increased values. The housing and community facilities issues for the Region include: addressing both low and moderate income ranges and middle and upper income housing needs, the relationship of employment opportunities to housing, and protecting community quality of life.

To ensure that housing is compatible with regional needs, the Region should support a variety of housing types such as rental housing, multi-family housing, age-restricted housing, and supportive and special needs housing. Agriculture is an important part of the essential character of the Highlands Region’s culture, landscape, and economy. Agriculture presents unique housing requirements in order to sustain the agricultural economy, such as farm worker housing (both seasonal and long-term) and the use of clustered development (to minimize development conflicts with agriculture). The RMP seeks to provide mechanisms to address the need to have a full range of variety and choice in housing opportunities in the Highlands Region and supports the Council on Affordable Housing (COAH) substantive certification program.

In order to guide future residential land use to areas appropriate for development and redevelopment and to maximize the efficiency of land use, the RMP seeks to identify regional opportunities for future growth that will be considered during the Plan Conformance process. Conforming municipalities will evaluate the Highlands build-out model as a means to assess long term planning needs in support of housing, employment, community facilities and quality of life.

The RMP guides development away from environmentally sensitive and agricultural lands and promotes compact development and redevelopment in areas where adequate public facilities are available to serve new growth, provided that it is compatible with existing land uses and community character. Many of the RMP policies and objectives reflect the need for a range of housing opportunities. The long term integrity of the Highlands Region involves sustainable economic and fiscal health of the Highlands communities as well as preservation of its natural resources. It also supports economic improvement, in the context of greater land, infrastructure and resource efficiency.

Several agencies and initiatives throughout the state play a role in supporting the RMP policies including the State Development and Redevelopment Plan, the Council on Affordable Housing, the Governor’s Affordable Housing Initiative and individual municipal and non-profit efforts. In the Highlands Region, the approach to housing will require a comprehensive analysis of conditions and a variety of approaches and mechanisms will be considered.

**RMP Policies and Objectives Addressed**

*Policy 6B3.* To promote compatible growth opportunities that include in-fill development, adaptive re-use, redevelopment, and brownfields redevelopment in existing developed areas.

*Policy 6B4.* To promote land uses which create a sense of place with attractive, walkable neighborhoods that support community connectivity of developed lands and community facilities.
Objective 6B4a. Communities of place with a mix of uses which promote multi-purpose trips, through proximity of neighborhood retail, commercial and entertainment uses to residential land uses that create communities that are largely self-sufficient regarding daily needs.

Objective 6B4b. Communities of place with a pattern of development which promotes walking and biking.

Policy 6B5. To integrate public parks and green spaces into development and redevelopment projects and ensure restoration of impaired natural resources to the extent required by law, at a minimum, and where feasible to a greater extent to maximize long term value of the project.

Objective 6B7a. Center based development initiatives should be planned within the Existing Community Zone to meet minimum density thresholds of three dwelling units per acre. Higher densities of five dwelling units and above are encouraged in areas designated as TDR Receiving Zones. Attainment of these density thresholds is discretionary, and shall be consistent with the resource and capacity goals and requirements in this plan. Centers in the Protection Zone and Conservation Zone, potentially including clustered development, shall be at densities appropriate to the zone, the community character and the use of septic systems or community wastewater systems.

Policy 6I1. To encourage new growth, where desired by the municipality, and development in the Existing Community Zone in the form of center based and mixed use development.

Policy 6L2. To require that conforming municipalities utilize the Highlands Build-out Model and Fiscal Impact Analysis as tools in the identification of appropriate areas for development, redevelopment and brownfields opportunities.

Policy 6L3. To require that conforming municipalities identify existing and planned community facilities and encourage shared service opportunities as part of the local Community Facility Plan element.

Policy 6N3. To require conforming municipalities and counties to incorporate programs for community and neighborhood design that support a variety of housing options for people with different income levels and different needs, mixed uses, redevelopment, adaptive re-use of historic sites and structures, and infill development in their master plans and development regulations.

Policy 6O1. To establish a region-wide, comprehensive approach to addressing residential needs in the Highlands Region, serving all age groups, income levels, and mobility options. Conforming municipalities must prepare and submit a petition for substantive certification to the Council on Affordable Housing (COAH).

Objective 6O1a. To develop a comprehensive Highlands housing program addressing regional housing needs within the context of preserving the character and environmental integrity of the Highlands.

Objective 6O1b. To develop an interagency partnership with COAH in support of a conforming municipality’s substantive certification plan development and regional affordable housing needs.

Policy 6O2. To promote center-based development approaches that recognize and address a mix of housing types including affordable housing, support mixed
uses where appropriate, and implement compact development approaches in the Existing Community Zone

**Policy 6O3.** To promote affordable housing within new residential and mixed use development, redevelopment, or adaptive reuse projects in the Existing Community Zone and where appropriate throughout the Highlands Region.

**Policy 6O4.** To require that conforming municipalities which have not submitted a Petition for Substantive Certification to COAH prepare and submit a complete Petition for Substantive Certification.

**Policy 6O5.** To require that conforming municipalities update the Housing Plan Element of their municipal master plan to reflect current conditions, implications of the RMP, and the informational needs related to their Petition for Substantive Certification to COAH.

**Policy 3A7.** To permit through local development review and Highlands Project Review limited development, including family and farm worker housing in Agricultural Resource Areas which are accessory to and/or supportive of sustainable agriculture, subject to compliance with the resource management programs of the RMP.

**Objective 3A7a.** Implementation of regulations which allow for construction of ancillary structures and housing for family and farm workers that are necessary to support farm operations, upon a demonstration that the proposed development is consistent with the resource protection goals of the RMP.

**Program Summary**

The creation and maintenance of housing of all types has several important effects on communities and the Highlands Region as a whole. In particular, housing is linked to the sustainability, diversity, and quality of life for the Region. A number of tools can be used to greatly increase the flexibility of zoning ordinances to address both the need for smaller building footprints and maximize the number of market niches available to home builders and developers. Ultimately, housing costs and community quality determine who can and will live in a particular area. Opportunities should be created for all residents through the most efficient use of the land and resources with development taking place with minimal strain on the environment while maintaining low costs.

In order to create a range of housing opportunities for the Highlands Region, several components will be addressed. First, there should be a variety and choice of housing. There is a need for options in the creation of affordable housing, including green building, as well as alternative housing schemes such as agricultural workers housing. Next, affordable housing in the Highlands Region should be both created and maintained. There is a constitutional obligation to provide realistic housing opportunities for low and moderate income families in New Jersey which applies throughout the Highlands Region. Sufficient housing for working families is crucial to the long-term sustainability of business and commercial enterprise in the Highlands Region.

Inter-agency coordination between the Highlands Council and other key players is also important, particularly the Council on Affordable Housing (COAH) in support of municipal Plan Conformance. This coordination will allow both the Highlands Council and outside agencies to share data, provide innovative municipal options, promote regional planning, assist in the proper siting of affordable housing opportunities, share innovative technologies, and support affordable housing development in the Highlands Region. Conforming
municipalities will evaluate housing opportunities using local knowledge and the Highlands build out model to evaluate and understand long range local and regional housing needs.

Finally, an appropriate jobs-housing balance should be encouraged. The current disparity between jobs and housing opportunities has encouraged sprawling development and increased commute times and if mitigated can improve air quality, traffic times, and commuter costs.

The housing plan element for Conforming municipalities shall discuss where affordable housing is to be located in support of RMP policies, local land use conditions and in support of long term planning needs. The housing plan element shall also contain an analysis of growth projections to be consistent with other RMP Conformance requirements, including the Municipal Assessment Report, the Master Plan, the land use plan, the community facilities plan, and evaluate the relationship of the housing and community facilities to the Board of Education 5-year facilities plan.

The Highlands RMP Housing Program supports a range of housing opportunities and includes the following program components:

- Housing Affordability
- Agricultural Workers Housing
- Housing and Community Facilities
- Smart Growth and Housing
- Green and Energy Efficient Facilities
- Housing and Employment

**Housing Affordability**

Affordable housing needs are fulfilled in various ways. Several factors must be considered when analyzing the creation and maintenance of affordable housing in the Highlands Region, including housing costs, market factors, location and municipal-State coordination. In the Preservation Area, where future development is limited, it is especially important to evaluate innovative options for fulfilling municipal affordable housing needs. The following mechanisms will be used to address regional needs:

- Municipal conformance with the New Jersey Council on Affordable Housing (COAH) Substantive Certification Program;
- The Highlands Build out model and RMP will serve in support of identifying local and regional housing needs;
- In support of long term planning and the RMP Monitoring Program develop indicators that may serve as an assessment tool in gauging the level of success in providing a full-range of housing within the Highlands Region;
- The creation and enhancement of partnerships for affordable housing between municipalities, counties, non-profits or other housing authorities; and
- Maximizing the opportunities of State programs, technical assistance and planning, and agency coordination to ensure regional initiatives are met.

**Agricultural Workers Housing**

The objective of this program component is to support human development, including both seasonal and non-seasonal family and farm worker housing which are accessory to and/or supportive of sustainable agriculture, subject to compliance with the RMP resource management programs. Coordination with the Department of Agriculture, the State Agricultural Development Committee,
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County Agriculture Development Boards and other interested parties will be necessary to further examine best practices and limitations that exist in support of this initiative. (See Agricultural Management and Sustainability Program for additional details)

Housing and Community Facilities

The link between housing and community facilities is characterized by state, regional, and municipal approaches in New Jersey. The New Jersey State Development and Redevelopment Plan serves as a tool used to support this inter-relationship. The designation of growth areas through the Plan Endorsement process of the State Plan identifies areas that are planned and appropriate for growth in New Jersey. The concept supports proper location, design, capacity and land to support the desired growth. The RMP supports the State Plan concept and builds upon it by identifying potential areas for enhanced land uses and evaluates the capacity and limitations of these areas. The RMP seeks to support county and municipal understanding and planning for appropriate housing and associated community facilities including opportunities for innovative and alternative technologies and shared service opportunities.

The program will support the nexus between housing and community facilities through an evaluation of the jobs to housing balance, transit enhancement, educational facilities, and recreation programs, opportunities for maximizing shared services and infrastructure investment as related to local government fiscal and community sustainability. (See the Community Development and Design Guidelines Program and Sustainable Regional Economy Program for additional guidance)

Smart Growth and Housing

Inefficient land use and sprawl development patterns have created fiscal stresses and economic imbalances in the Region, resulting in a need for a smart growth approach in support of achieving regional housing needs. The goal of this approach is to use land more efficiently and in a manner that facilitates economically vibrant communities, complete with jobs, houses, shopping, recreation, entertainment, and multiple modes of transportation, as a means to promote community health and sustainability. This program supports a housing mix that conceives of housing opportunities as a continuum of housing types each of which offers specific opportunities, not only to the marketing of housing choices at a wide range of values, but also for housing types that can fit into specific environments or provide specific market opportunities. It also assures that the land area, yards, and other elements of a housing type are set to a level that produces quality design.

The program will incorporate an assessment of opportunities for appropriate development, redevelopment, economic growth, and a Transfer of Development Rights (TDR) program. The program component seeks to identify ways to form livable, walkable communities in the Highlands Region. Municipalities will utilize the following smart growth planning approaches:

- Maximize the efficient use of existing infrastructure, in the form of redevelopment, infill, and adaptive reuse; and
- Adopt an approach for implementing compact forms of development that supports center-based development, with the use of clustering, lot-averaging and conservation development approaches in environmentally sensitive areas.

(See Highlands Smart Growth Manual Program, Community Development and Design Guidebook Program, Redevelopment Program, Highlands Development
Green and Energy Efficient Facilities

This program will support the implementation of green building and energy efficient technology in the rehabilitation, redevelopment and development of facilities including but not limited to housing throughout the Region. Recent innovations in building practices and development regulations reflect significant energy efficiency measures through building materials, energy efficient appliances, water conservation measures, innovative and alternative technologies that support conservation practices and common sense practices such as recycling and re-use.

Program components will include:

- Increasing the efficiency of land, resources, and utilities, by promoting green technology and energy efficient housing;
- Coordination with the Sustainable State Institute, Board of Public Utilities, the Green Building Society and alternative energy agencies and non-profit entities; and
- Education and outreach to stakeholders in support of RMP initiatives.

(See Efficient Use of Water Program, Low Impact Development Program and Redevelopment Program for additional details)

Housing and Employment

The Highlands Region and the State overall have a disparity between jobs and housing opportunities, forcing increased commutes by automobile. By providing a better balance of jobs to housing of all types, tailpipe emissions and the number of hours that vehicles are operating can be reduced. The quality of life concerns associated with increased miles traveled, limited housing near employment centers and inefficient infrastructure investments requires comprehensive planning initiatives. Through sound planning practices that support both resource protection and appropriate growth, the goal of community economic sustainability may be realized.

The following opportunities serve to support RMP program components:

- Coordination with the New Jersey Department of Transportation (NJDOT) along with NJTransit to promote the Transit Village Initiative which focuses on creating and maintaining livable and sustainable communities with transportation playing a key role. Through several programs, NJTransit and their partners attempt to build communities where public transportation already exists, supporting transit-oriented choices for people to live, work and play, thereby reducing reliance on the automobile.
- The utilization of an Urban Enterprise Zone (UEZ) program, which allows participating businesses to access financial programs designed to stimulate job creation and business growth.
- Implement the Main Street New Jersey program, which is a NJDCA Office of Smart Growth program intended to assist local business districts.
- Coordinate with the Office of Smart Growth to ensure that regional conditions are reflected in State Plan policies and initiatives.
- Coordination with the New Jersey Economic Development Authority and the Housing Mortgage and Finance Assistance programs to ensure that regional initiatives are supported by state economic and housing programs.

(For additional guidance see Sustainable Regional Economy Program.)
The Highlands Act notes that, “the existing land use and environmental regulation system cannot protect the water and natural resources of the New Jersey Highlands against the environmental impacts of sprawl development.” (Section 2).

The Highlands Act requires that this Plan’s smart growth component include an assessment, based upon the resource assessment, “of opportunities for appropriate development, redevelopment, and economic growth, and a transfer of development rights program which shall include consideration of public investment priorities, infrastructure investments, economic development, revitalization, housing, transportation, energy resources, waste management, recycling, brownfields, and design such as mixed-use, compact design, and transit villages.” (Section 11.a.(6))

The Highlands Act requires the RMP to promote smart growth practices in the Highlands Region, particularly with regard to development in the Existing Community Zone and in areas appropriate for redevelopment.

**RMP Policies and Objectives Addressed**

**Policy 6H3.** To ensure that development activities within the Existing Community Zone are subject to standards and criteria which ensure that development and redevelopment incorporate smart growth principles and do not adversely affect natural resources.

**Program Summary**

The Highlands Council will work with state and local agencies and technical and planning experts to prepare a guidance manual on smart growth techniques for use by Highlands Region municipalities, and will employ an outreach and assistance program in support of both development and utilization of the manual.

**Highlands Smart Growth Manual**

The Highlands Council working in partnership with agencies and development partners will prepare a Highlands Smart Growth Manual addressing issues including but not limited to the following:

- Location efficiency
- Resource efficiency
- Green building technology, including water conservation and energy efficient practices
- Innovative building practices and techniques
- Site layout and design techniques
- Cluster, lot-averaging and conservation development techniques
- Promoting a better jobs to housing balance
- Redevelopment and revitalization techniques
- Addressing affordable housing and community facilities
- Connecting transportation, transit and land use planning
- List of state and national smart growth publications and resources

**Municipal Outreach**

The Highlands Council will distribute the Highlands Smart Growth Manual to all Highlands Region municipalities. It will establish an outreach program to engage professional planners, landscape architects, architects and property owner/developers implementing Smart Growth practices in the Highlands.
Region. Finally, the Council will provide technical and planning assistance and planning grants to municipalities with regard to the use of the Highlands Smart Growth Manual.

### Community Development Design Guidebook

#### Issue Overview

The Highlands Act notes that, “the existing land use and environmental regulation system cannot protect the water and natural resources of the New Jersey Highlands against the environmental impacts of sprawl development.” (Section 2). The Regional Master Plan guides new growth and development to areas of existing development. In addition, the Plan contemplates that Highlands Development Credits will be transferred to receiving sites within the Existing Community Zone. The Plan provides, however, that community development and redevelopment must be carefully tailored to ensure that new growth and development is compatible with existing community character.

#### RMP Policies and Objectives Addressed

**Policy 6H1.** To promote compatible development and redevelopment within the Existing Community Zone.

**Policy 6H3.** To ensure that development activities within the Existing Community Zone are subject to standards and criteria which ensure that development and redevelopment incorporate smart growth principles and do not adversely affect natural resources.

**Policy 6H5.** To ensure that development and redevelopment in the Existing Community Zone are compatible with existing community character.

**Policy 6I1.** To encourage new growth, where desired by the municipality, and development in the Existing Community Zone in the form of center based and mixed use development.

#### Program Summary

The Highlands Community Development Design Guidebook is intended to serve as a “how to” handbook for community development and redevelopment to employ best community design principles and implementation of Smart Growth practices.

#### Highlands Development Design Guidebook

The Highlands Council will prepare a Highlands Development Design Guidebook for use by municipalities in their development planning, design and review process. The guidebook will address issues including but not limited to the following:

1. Mixed use development guidelines
2. Infill development practices and standards
3. Historic building and feature development practices
4. Scenic Resource Protection design elements
5. Techniques for community character analysis
6. Economic Development techniques (including Downtown Business Districts, home office operations, Bed and Breakfast operations, tourism and recreation connections)
7. Handbook of traditional design practices
   a. Community Patterns
      i. Villages and Towns (including street patterns, streetscape, parking patterns and requirements, site layout patterns, building patterns, landscape patterns and materials)
Municipal Assistance

The Highlands Council will provide technical and planning assistance to municipalities regarding the use of the Highlands Community Development Design Guidebook. The Highlands Council will also planning grants to municipalities with regard to the use of the Highlands Community Development Design Guidebook.

Low Impact Development Program

Issue Overview

The impact of development on natural resources is often the result of development standards in local codes or development practices that result in greater negative impacts than are actually necessary to accommodate the development intent. Cluster development can be very helpful with this problem in that it reduces the total development footprint. However, a wide variety of techniques have been developed in recent decades to reduce the environmental impacts within the building site itself. The design of roads, parking lots and roofs has the ability to reduce environmental impacts. A variety of site development and landscaping techniques also have value in reducing the impacts of development. The Highlands Regional Master Plan recognizes the value of such techniques, commonly referred to as “low impact development” measures.

RMP Policies and Objectives Addressed

Objective 1B2a. Implementation through Plan Conformance of regulations which limit permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds to maintenance of pre-existing uses and permit minimal removal of woody vegetation from forested lands, subject to an approved Forest Management Plan or development that utilizes low impact development best management practices and an approved forest mitigation plan.

Objective 1B2b. Implementation of regulations through Plan Conformance which allow for redevelopment of previously developed areas and for other compatible uses that minimize losses to forested lands within Low Integrity Forest Subwatersheds in accordance with an approved forest mitigation plan or low impact development best management practices.

Objective 1B3b. Implementation of resource management programs to avoid loss of forests such as low impact development best management practices and mitigation and/or restoration.

Objective 1C2a. Technical guidelines and procedures for development and implementation of low impact development best management practices to protect, enhance and restore forest resources.


Objective 1D5c. Implement Low Impact Development Best Management Practices for any development activity proposed within a Riparian Area, which minimize both alterations of natural vegetation and increases in impervious area, and provide for mitigation through restoration of impaired Riparian Areas in the
Objective 1D6c. Require, where land disturbance is otherwise permitted, that low impact development best management practices are followed to minimize any potential for habitat or water quality impairment.

Objective 1D7b. Require, where land disturbance is otherwise permitted, that low impact development best management practices are followed to minimize any potential for habitat or water quality impairment.

Objective 1F4a. Implementation of performance standards through local development review and Highlands Project Review requiring all development to employ low impact development best management practices and avoid disturbance of a critical habitat feature whenever possible and to promote avoidance and minimize impact when disturbance is unavoidable.

Objective 2D3a. Implement, through local development review and Highlands Project Review, low impact development or other best management practices to minimize the need for engineered recharge methods for the purpose of complying with N.J.A.C. 7:8 (Stormwater Management Rules).

Policy 2D9. To develop technical guidelines and procedures for low impact development, engineering and other appropriate best management practices to protect, restore and enhance Prime Ground Water Recharge Areas.

Objective 2G5b. Require low impact development and other best management practices standards for stormwater management to minimize the discharge of stormwater-entrained pollutants to ground and surface waters.

Objective 2G6a. Develop technical guidelines and procedures for low impact development and best management practices to protect ground and surface water quality.

Policy 2G7. To promote the implementation of low impact development standards and best management practices to protect the quality of ground and surface water quality.

Policy 6N2. To require municipalities to adopt low impact development standards to protect the natural hydrologic features of the land.

Objective 8D1a. Municipal and county master plans and development regulations which permit the establishment of home occupations, small business incubator programs and innovative technologies that promote compact design, native species landscaping, low impact development, energy efficiency and resource conservation in support of comprehensive RMP goals.

Program Summary

The Highlands Council will use Plan Conformance, Highlands Project Review, and the development and dissemination of guidance to encourage use of low impact development techniques for all types of development. These techniques address at a minimum the following: pervious pavements, green roofs, narrower roads rain gardens, natural landscaping, rain barrels, re-use basins, curbless roads, swale blocks, positive surface drainage, and reverse soil compaction.

Pervious Pavements

Most pavement surfaces are designed to be impervious, serving to block the infiltration of precipitation to the ground below. Pervious pavement is design to maintain or even increase infiltration without damage to the transportation surface or to public safety. Pervious pavements range from pervious asphalt and
concrete to gravel drive surfaces with a retainer that holds the gravel in place and prevents the compacting that reduces infiltration. The use of pervious asphalt and concrete on low-volume roads and on parking lots will assist in reducing the impact of development. For individual home paving, blocks of various types and even gravel driveways can reduce the impervious impact of a building and its parking.

Pervious pavement is useful in all community character districts and all areas and zones. They work least well on high traffic volume roads. Paving systems that permit grass to grow within the paved area or require little underlying engineering are generally suitable for residential drives or infrequently used parking areas. Pervious pavement techniques have been proven to work in climates with winter freezes, such as New Jersey. Local subdivision regulations should be modified to reduce the amount of impervious materials used in development.

**Green Roofs**

Like most pavement, roofs are designed to be impervious. Unlike pavement, pervious roofs are not acceptable. However, a technique known as green roofs is commonly used in Europe and more frequently in this country to strike a balance. Green roofs use a combination of live plants and soil to create a stormwater management facility on rooftop. Green roofs hold water, provide for some evapotranspiration and provide some cleaning action, which can reduce the need for additional detention and pollutant reduction. They are installed on generally flat roofs where the roof can hold a significant amount of water and release it slowly. While there are some additional costs in installation, there are important energy savings that should offset the costs through energy savings and increased longevity of roof materials that are no longer subject to extreme heat or cold or intensive sunlight.

The target should be new commercial development anywhere in the Highlands. Large buildings with roofs over 20,000 square feet should have the greatest priority, but all commercial development can easily implement this technique since few have a real need for sloped roofs. Apartment buildings are also obvious targets. The technique can be used in both development and redevelopment. The use on steeper roofs is more difficult, and so for most residential units will not prove to be a practical program.

The zoning or building codes should be modified to mandate green roofs on specific classes of buildings or land uses. Anybody seeking not to provide a green roof should be required to have a conditional use permit and demonstrate that the alternative will perform as well and not require more total land to be disturbed.

**Narrower Roads**

The Highlands has a large number of cul-de-sac roads that cannot easily be connected due to topographic and geological conditions. Often, these streets serve a small number of residences, and lots are large enough that parking does not occur on the street. Requiring a standard local street width is unnecessary as the traffic volume is often very low. The trip generation indicates that two cars would be heading towards each other in a one-lane cross section less than once a month. Since these are small, local streets, nearly every time the person will be known and the appropriate action taken without any confusion since both drivers will have a good idea of the destination of the other. This applies in all small, local residential cul-de-sacs or small loop streets.

Local zoning or subdivision regulations should provide for narrower roads. A
10- to 12-foot lane lets even a bus or truck pass easily. For lots without on-street parking, a 10-foot lane works for up to 10 dwelling units and a 14-foot lane for up to 20 homes where it is designed to let two cars pass. The intersection of the street with a larger road needs a full 24-foot width to allow passing at the entry so as not to back up a higher volume road. The Highlands Council will develop recommendations for adoption into the Residential Site Improvement Standards to implement this concept, which will simultaneously reduce runoff, save land, protect environmental resources and reduce development costs.

Rain Gardens

Rain gardens are small, specifically designed, vegetated depressional areas typically used to store and recharge rain from a residential roof, acting like a small retention facility that effectively disconnects the roof's impervious surface and reduces the stormwater system capacity requirements. The vegetated soil layer is underlain by gravel or small rock in a manner that ensures proper drainage so that ponding does not occur. Rain gardens can be used primarily for single-family dwellings or two- or three-family dwellings.

The local zoning and subdivision regulations need to have the design specifications for this type of facility. They should be mandated on lots in excess of 12,500 square feet and encouraged on smaller properties.

Natural Landscaping

The normal residential lot and most office buildings sit on a yard that is maintained as a lawn. Business parks may also have this characteristic, as do many out parcels in shopping centers. The lawns have higher degrees of compaction than natural areas of meadow or forest which increases stormwater runoff. A great many of the lawns receive pesticide and nutrient applications that can result in ground and surface water contamination. Replanting areas to be natural, not maintained as lawn, is desirable.

Trees and natural areas have a documented, desirable impact on property value. They provide a greater sense of privacy, reduce the maintenance cost of the yard, and mitigate summer heat and winter cold so that they contribute to energy savings if properly installed.

This is both a new development and a mitigation strategy that works on existing developments. It is useful on most lots that are maintaining lawns.

Local codes should mandate this technique for new development on larger nonresidential properties. It should be strongly encouraged for residential developments as it promotes the Highlands character. The Highlands Council will develop an educational program to encourage property owners to retrofit existing lawns, potentially including an annual awards program recognizing the best new landscaping and the best restoration landscaping of existing property to enhance the program.

Rain Barrels

Rain barrels and cisterns are stormwater storage facilities where the water is used for lawn watering. This reduces the use of potable water supplies and reduces total stormwater runoff. The difference between them is a matter of scale, with the cistern having greater capacity. The rain barrel is located at grade and generally has no mechanical system for using the stored water, while cisterns may be above or below grade and generally have pumps to increase the efficiency of lawn watering.

These apply to single-family or smaller residential units. They can also work with
small nonresidential properties that have a lawn or planning area to maintain.

Local land development regulations should have standards and guidelines for these techniques. They should be a part of both low-impact development and a water conservation strategy for local governments. Reducing overall consumption assists in ensuring an adequate supply during droughts.

### Re-Use Basins

The re-use basin is a retention basin that is designed to not only serve stormwater management objectives, but also store irrigation water. Thus, it is a multipurpose stormwater management facility that is designed to reduce consumptive water use for landscaping.

It is most important for larger office parks or business parks with lots of grassed area, golf courses, and other larger users that water lawns. By using and reusing stormwater for irrigation, a community can cut its water usage. Requirements for this technique should be contained in the site plan review regulations.

### Curbless Roads

Curbs hold water on roads until it can be funneled into an engineered stormwater system. If water drains off the road into lawns or natural areas even when there is a storm sewer system, a portion of the stormwater is held on site for recharge. Time of concentration for stormwater runoff is reduced, which can reduce stormwater management costs.

This technique is most useful in residential development; in commercial and many other nonresidential areas, there generally is insufficient natural landscape or lawn area to handle the water. However, where there are extensive lawns in nonresidential areas, this technique may also be used.

Site plan regulations should have road crown and other standards that make a curbless road drain. A key part of this technique is to have reinforced shoulders, by installing base material several feet beyond the pavement. The regulations may need to identify areas where this is unsuited due to topography or require its use with other techniques.

### Swale Blocks

Swale blocks are small check dams in ditches or swales designed to slow runoff so it has greater opportunity for recharge and cleaning and reduces the peak of the runoff all desirable elements. They can be used in road side ditches, swales or ephemeral streams.

The site plan regulations should set forth areas where these should be used and the thresholds for using them. Too flat or too steep terrain will limit their use.

### Positive Surface Drainage

In general, storm sewers speed stormwater to streams far more rapidly than surface drainage does. In addition, there is no opportunity for cleaning or recharge once water enters a storm sewer system. Whenever positive surface drainage is used to provide stormwater treatment prior to discharge to an engineered system, it is generally more beneficial. Suburban and cluster developments of all types can take advantage of this.

Site plan regulations should contain language that encourages positive surface drainage whenever feasible. There will be areas where it cannot be effectively used. In the upper areas of watersheds where swales or ephemeral streams can be used, they should be, along with suitable controls to preclude increased erosion. Stormwater control structures are ideally placed here.
Reverse Soil Compaction

During the process of development, even open spaces are compacted, greatly reducing the soils capability to recharge and retard runoff. Grading, equipment movement and temporary storage all result in compaction. Tilling the land that will be planted in lawns or other landscaped areas enhances the ability to function efficiently.

All lawn areas and open spaces that are being revegetated should be required to have reverse compaction. The graded areas should be tilled prior to replacing top soil and again after top soil is spread to achieve maximum results. Subdivision regulations should require this of all such areas containing more than 3,000 square feet per lot or pervious area.

### Part 7. Landowner Fairness

#### Highlands Development Credits

<table>
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<th>Issue Overview</th>
<th>The Highlands Development Credit (HDC) Program is a regional transfer of development rights program to further the goals of the Highlands Act.</th>
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<td>RMP Policies and Objectives Addressed</td>
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<td>Program Summary</td>
<td>The HDC Program guides new growth and development away from lands with little or no capacity to accommodate human development without adversely affecting the integrity of the Highlands ecosystem. This program establishes procedures and standards by which eligible property owners may apply for an allocation of HDCs. The program provides for the designation of receiving zones where HDCs may be transferred and used for development purposes. The program also creates a Highlands Development Credit Bank to serve as the administrator of the Highlands Development Credit program.</td>
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<tr>
<td>Highlands Development Credit Created</td>
<td>The Highlands RMP creates a right in the form of a Highland Development Credit (HDC) which can be used to increase the density or intensity of development in a designated Receiving Zone.</td>
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</table>
| Highlands Development Credit Bank Created | 1. The Highlands RMP provides for the creation of a Highlands Development Credit Bank.  
2. The Highlands Development Credit Bank is to serve as a regional clearinghouse for information with regard to the Highlands Development Credit program.  
3. The Highlands Development Credit Bank is to serve as the administrator and official recording agency for the Highlands Development Credit program.  
4. The Highlands Development Credit Bank is authorized to buy and sell HDCs. |
| Allocation of Highlands Development Credits | 1. The owners of land in the Protection Zone and the Conservation Zone in the Preservation Area, which was zoned for residential use on August 9, 2004 and which satisfy one (1) of the following criteria, are eligible to apply for an allocation of HDCs:  
- the parcel of land has an area of at least five (5) acres; or  
the area of the parcel of land is at least three (3) times the minimum lot size in effect on  

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August 9, 2004;
- the owner voluntarily chooses not to develop the parcel of land pursuant to one or more of the exemptions under section 28 of the Act; or
- the owner demonstrates unique and extenuating financial circumstances such as imminent bankruptcy, extraordinary medical expenses, or loss of job and inability to secure new job within 6 months, which may only be ameliorated through an expedient sale of his Highlands Development Credits.

2. The owners of land in the Protection Zone and the Conservation Zone in the Preservation Area, which was zoned for non-residential uses on August 9, 2004, are eligible to apply for an allocation of HDCs.

3. The owners of eligible parcels of land may apply to the Highlands Council for an allocation of HDCs by submitting an application for an HDC Allocation Determination to the Highlands Council together with the information required for the Council to make an allocation of HDCs.

4. HDCs shall be allocated to individual parcels of land on the basis of the following formula:

\[(C_B - E_R) \times K_{MA} \times K_{EU} = \# \text{ HDCs}\]

\[C_B = \text{Base Credit} – \text{the residential units or residential unit equivalents that could have been developed on the parcel of land on August 9, 2004, taking into consideration all municipal development regulations and applicable state and federal laws and regulations.}\]

\[E_R = \text{Reserved Exemptions} – \text{the number of exemptions reserved by the owner for development of the parcel of land.}\]

\[K_{MA} = \text{Market Adjustment Factor} – \text{an adjustment factor to recognize that per unit value of land varies by location within the Highlands Region.}\]

\[K_{EU} = \text{End Use Factor} – \text{an adjustment factor to recognize that the value of the land varies according to the end use to which the property can be developed.}\]

5. In the event that a property owner voluntarily chooses not to develop a residentially zoned parcel of land pursuant to one or more exemptions under section 28 of the Act, the Base Credit Number shall be increased reflecting the parcel's regional resource value.

6. As soon as practicable after the Highlands Council receives a complete Application for an HDC Allocation Determination, the Council will issue a HDC Allocation Letter setting forth the number of HDCs allocated to the parcel of land.

7. An HDC Allocation Letter shall include a specific restriction on the future use of the parcel of land to which HDCs are allocated.

8. If the owner of land disputes the number of HDCs allocated to his or her property, the owner may seek reconsideration by the Highlands Council only on the grounds of specific factual errors.

9. Lands within the Protection Zone and the Conservation Zone within the Planning Area may be made eligible for allocations of HDCs if approved by the Highlands Council through the municipal Plan Conformance process.

Highlands Development Credit

1. No HDC may be sold, transferred or encumbered until the property owner has obtained a HDC Certificate from the Highlands Development Credit
Certificates

1. The Highlands Development Credit Bank will not issue a HDC Certificate until a conservation easement restricting the future use of the parcel of land to which HDCs have been allocated by the Highlands Council has been recorded on the chain of title to the parcel to which the HDCs were allocated.

2. The conservation easement shall restrict the future use of the parcel of land in accordance with the provisions of the Highlands Council’s HDC Allocation Letter and shall be enforceable by the municipality in which the parcel of land is located, the New Jersey Department of Environmental Protection, the Highlands Council, and an appropriate non-profit corporation, if applicable.

3. Prior to the encumbrance of HDCs as collateral or other security, the holder of the HDC Certificate shall notify the Executive Director of the Highlands Development Credit Bank of the name and address of the lender and the date, amount and term of the loan or obligation.

4. In the event a government agency or non-governmental organization proposes to acquire conservation or agricultural easements which restrict the future use of land in the Protection Zone or the Conservation Zone in the Preservation Area and the agency requests a HDC Certificate from the Highlands Development Credit Bank, the Executive Director shall procure an HDC Allocation Letter from the Highlands Council and issue a HDC Certificate to the agency or organization when the easement(s) are recorded.

5. When HDCs are used in conjunction with a development project, the holder of the HDC Certificate shall, within ten (10) days of municipal development approval, notify the Highlands Development Credit Bank of the use of the HDCs and apply for a Certificate of Redemption.

6. An application for redemption of a HDC shall include the name of the holder of the HDC Certificate, the name of the developer who used the HDCs, the municipality where the development using HDCs is located, the legal description of the parcel of land on which the HDCs were used and the date of the municipal approval of the development.

7. In the event that only a portion of the HDCs which are authorized in a HDC Certificate are redeemed, the Highlands Development Credit Bank shall issue a new HDC Certificate for the HDCs which were not used.

Sale and Use of HDCs

1. Prior to the sale, transfer or conveyance of HDCs, the holder of an HDC Certificate shall apply to the Highlands Development Credit Bank for the re-issuance of a HDC Certificate in the name of the grantee.

2. An application for re-issuance of an HDC Certificate in conjunction with a sale, transfer or conveyance of HDCs shall include the name(s) of the grantee(s), the name(s) of the grantor(s), the number of HDCs to be sold, transferred or conveyed, the date of the proposed closing of the transaction, written documentation of the interest sold, transferred or conveyed and the consideration for the sale, transfer or conveyance.

3. Prior to the encumbrance of HDCs as collateral or other security, the holder of the HDC Certificate shall notify the Executive Director of the Highlands Development Credit Bank of the name and address of the lender and the date, amount and term of the loan or obligation.

4. In the event a government agency or non-governmental organization proposes to acquire conservation or agricultural easements which restrict the future use of land in the Protection Zone or the Conservation Zone in the Preservation Area and the agency requests a HDC Certificate from the Highlands Development Credit Bank, the Executive Director shall procure an HDC Allocation Letter from the Highlands Council and issue a HDC Certificate to the agency or organization when the easement(s) are recorded.

5. When HDCs are used in conjunction with a development project, the holder of the HDC Certificate shall, within ten (10) days of municipal development approval, notify the Highlands Development Credit Bank of the use of the HDCs and apply for a Certificate of Redemption.

6. An application for redemption of a HDC shall include the name of the holder of the HDC Certificate, the name of the developer who used the HDCs, the municipality where the development using HDCs is located, the legal description of the parcel of land on which the HDCs were used and the date of the municipal approval of the development.

7. In the event that only a portion of the HDCs which are authorized in a HDC Certificate are redeemed, the Highlands Development Credit Bank shall issue a new HDC Certificate for the HDCs which were not used.

Designation of Receiving Zones

1. Parcels of land located within the Existing Community Zone and Highlands Redevelopment Areas, may be designated as Receiving Zones by a Highlands municipality upon approval by the Highlands Council in conformance with the Regional Master Plan.

2. Parcels of land located in the Conservation Zone may also be designated as Receiving Zones upon approval of the Highlands Council, provided that such receiving zones are consistent with the Highlands RMP and the
development does not conflict with the maintenance of viable agriculture.
3. Municipalities may, through the municipal Plan Conformance process, establish Receiving Zones in the Existing Community Zone which are restricted to transfer and use of HDCs which are allocated to parcels of land located within the municipality and/or county where the Receiving Zone is located through municipal plan conformance.
4. Municipalities may establish brownfields as Receiving Zones through municipal Plan Conformance, provided that the Highlands Council determines that such brownfields can be developed without adversely affecting the Highlands Ecosystem.
5. Municipalities within the Planning Area, which do not petition the Highlands Council for a determination of conformance, may establish Receiving Zones for the use of HDCs for areas which are in the Existing Community Zone or Conservation Zone upon approval of the Highlands Council.
6. Lands which are located within Highlands Counties, but not within the boundaries of the Highlands Region, may be designated as a Receiving Zone for the use of Highlands Development Credits upon approval of the Highlands Council, provided that the municipality in which the Receiving Zone is to be located has first examined the land capacity, infrastructure capacity, ecological capacity and real estate market of the proposed Receiving Zone lands consistent with the requirements of the Highlands Development Credit Program Receiving Zone Feasibility Grant Program.
7. Within the Highlands Region, the Highlands Council may designate parcels of land as either Higher Intensity Receiving Zones or Lower Intensity Receiving Zones, in response to a petition from the municipality in which the receiving zone is to be located. Higher Intensity Receiving Zones are those zones that will require appropriate public water and wastewater infrastructure with capacity to accommodate additional or new growth and which are proximate to existing developed lands and multi-modal transportation infrastructure. Areas that serve as Higher Intensity Receiving Zones will have a minimum net residential density of 5 dwelling units per acre or its residential unit equivalent for non-residential development. Lower Intensity Receiving Zones are those zones that have residential densities below 5 dwelling units per acre but which provide some amount of bonus residential density or increase in non-residential intensity which is consistent with existing community character. In many cases, Lower Intensity Receiving Zones will be located in areas where the community character is more rural or suburban.

The Highlands Council has developed a preliminary, GIS-based analysis of lands that may have potential for serving as HDC receiving zones, as follows:
1. Areas within the Existing Community Zone and areas outside of the Existing Community Zone that are served with either public water or public wastewater infrastructure are identified as the first level of potential voluntary HDC receiving zones. These areas represent 82,870 acres across the Highlands Region and are shown as First Level Receiving Zones on the figure Potential Areas for Voluntary HDC Receiving Zones.
2. Areas within the Highlands Region that are served with either public water or public wastewater infrastructure are identified as the second level of potential voluntary HDC receiving zones. These areas represent 32,634 acres across the Highlands Region and are shown as Second Level Receiving Zones on the figure Potential Areas for Voluntary HDC Receiving Zones.
Potential Areas for Voluntary HDC Receiving Zones

Legend

Suitability for Higher Intensity Receiving Zones
- First Level - Lowest
- Second Level - Low
- Third Level - Moderate
- Fourth Level - High

Administrative Boundaries
- Municipal Boundaries

Highlands Boundaries
- Preservation Area Boundary
- Highlands Region

Sources:
New Jersey Highlands Council, 2007

The Highlands Council makes no representations of any kind, including, but not limited to, the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied with respect to the information contained on this map. The State of New Jersey shall not be liable for any actions taken or omissions made from reliance on any information contained herein from whatever source nor shall the State be liable for any other consequences from any such reliance. Additional sources of information may include NJDOT and NJDEP GIS digital data, but this secondary product has not been verified by NJDOT or NJDEP.

Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2007
3. Areas within the Highlands Region that are served with both public water and public wastewater infrastructure are identified as the third level of potential voluntary HDC receiving zones. These areas represent 15,457 acres across the Highlands Region and are shown as Third Level Receiving Zones on the figure Potential Areas for Voluntary HDC Receiving Zones.

4. Areas within the Highlands Region that are served with both public water and public wastewater infrastructure with available capacity are identified as the fourth level of potential voluntary HDC receiving zones. These areas represent 14,850 acres across the Highlands Region and are shown as Fourth Level Receiving Zones on the figure Potential Areas for Voluntary HDC Receiving Zones.

5. Any area within the Highlands Region identified by the Highlands Council as a potential voluntary HDC receiving zone may not be designated as such unless the municipality in which the zone is identified petitions the Highlands Council for the designation.

Part 8. Sustainable Economic Development

Sustainable Regional Economy

Issue Overview

The Highlands Region is characterized by a dynamic economy, and continues to exhibit strength relative to the State as a whole. The challenge facing many communities is the question of how to balance resource protection needs with maintaining a vibrant community and a sustainable local and regional economy.

While water resource protection is a driving force behind the Highlands Act, the need for an economically viable Highlands Region is also addressed through certain goals and policies. One major goal is that of achieving “sustainable economic development in the Highlands Region” in order to achieve a more sustainable regional economy. The Act outlines what it seeks to encourage such as agricultural viability, redevelopment, smart growth strategies, improved land use efficiency, transit oriented development and shared services. Conversely, the Act discourages piecemeal, scattered and inappropriate sprawl-type development, and recognizes it as an inefficient use of land and an impediment to achieving a more sustainable regional economy.

The Act states that it is critical to ensure the economic viability of all communities throughout the Region. Therefore, it is important that an economic program be established to provide a comprehensive suite of tools, incentives and assistance available for supporting regional vitality. Many RMP policies and objectives address this need. As the Highlands Region is large and diverse, certain policies and objectives may be more or less relevant depending on the local character and surroundings.

In areas characterized by high natural resource values, economic vitality will be in the form of agriculture and forestry, efficient land use practices such as redevelopment of brownfield and greyfield sites and existing developed areas, expansion of recreation and tourism, and greater efficiency through sharing of municipal services. Agricultural areas will benefit from an agricultural sustainability approach that includes agri-tourism and reduction of the potential for conflicting land uses through clustering and redevelopment of existing developed lands. Economic viability that stems from efficient land,
infrastructure and resource use is perhaps best served in areas characterized by
existing infrastructure and compact development. These opportunities may
include redevelopment, sharing of services, downtown revitalization, business
retention and expansion, transit oriented development, and heritage tourism.

In order to evaluate the health of the regional economy in a reliable and
consistent manner, monitoring, tracking and evaluation are required. As the
RMP is being implemented over time, it is critical that there be a means to assess
the long-term economic conditions of the Region, as well as the programs,
policies and objectives associated with the Plan. The long-term economic
tracking program will support and coordinate the comprehensive economic
development efforts of the Highlands Council and other agencies.

RMP Policies and
Objectives Addressed

**Policy 8A1.** To promote appropriate, sustainable and environmentally
compatible economic development throughout the Highlands Region.

**Objective 8A1a.** Establish a Highlands Economic Development Program which
identifies sustainable economic development opportunities and strategies for
recruiting and promoting such development in the Highlands Region.

**Objective 8A1b.** Serve as a technical resource and advocate for Highlands
economic development assistance in working with municipalities, counties,
regional agencies and the private sector to promote sustainable economic
development in the Highlands Region on a coordinated basis.

**Policy 8A4.** To serve as a clearinghouse for economic development
opportunities in the Highlands Region.

**Objective 8A4a** Identification and marketing of Highlands Region areas
including brownfield sites that may be appropriate for local and regional
redevelopment initiatives.

**Policy 8A5.** To conduct original research in regard to catalytic economic
initiatives which would promote and support the long term economic
sustainability of the Highlands Region.

**Objective 8A5a.** A long-term economic tracking program as a means to
continually assess the long-term economic progress of the Region through
specified economic indicators in order to establish Highlands trends.

**Objective 8A5b.** Develop protocols required for economic plan elements,
including instruction on tracking and reporting of regional economic indicators

**Policy 8B1.** To preserve and enhance the sustainable economic benefits of
agricultural practices in the Highlands Region.

**Objective 8B1a.** Coordinated activities with the NJ Department of Agriculture
and other entities to ensure that existing economic programs to sustain
agriculture are maximized.

**Policy 8B2.** To expand and enhance the agricultural economy in the Highlands
Region.

**Objective 8B2a.** Coordinated activities with the NJ Department of Agriculture
and other entities to improve opportunities for sustainable agricultural operations
that improve farm incomes and the long-term viability of farming.

**Policy 8C1.** To promote sustainable economic development such as recreation
and tourism which derive economic benefit from sustainable use of the natural
Objective 8C1a. Identification of specific economic development initiatives which would encourage and promote eco-, agri - and heritage tourism in the Highlands Region.

Objective 8C1b. Evaluation of the feasibility of establishing transit-oriented tourism connections and opportunities.

Objective 8C1c. Evaluation of economic feasibility of alternative forms of overnight accommodations to promote recreation and tourism.

Policy 8C2. To establish a certified eco-, agri- and heritage tourism program.

Objective 8C2a. Identification of the necessary elements of a sustainable and comprehensive tourism program for the Highlands Region.

Objective 8C2b. Creation of a formal tourism program for the Highlands Region.

Policy 8D1. To ensure opportunities for home office, entrepreneurial and other small business activities in the Highlands Region.

Objective 8D1a. Municipal and county master plans and development regulations which permit the establishment of home occupations, small business incubator programs and innovative technologies that promote compact design, native species landscaping, low impact development, energy efficiency and resource conservation in support of comprehensive RMP goals.

Policy 8E1. The Cash Flow Timetable shall track the revenues and costs associated with the Highlands Protection Fund, with the exception of the Pinelands Property Tax Stabilization Aid category. Four components that shall be tracked in the Cash Flow Timetable include:

- Planning Grants Program (including Incentive Planning Aid and Regional Master Plan Compliance Aid);
- Highlands Property Tax Stabilization Aid;
- State Aid for Local Government Units (Watershed Moratorium Offset Aid and other State Aid funding); and
- Land Acquisition Tracking.

Program Summary

This program serves as a comprehensive mechanism for supporting and monitoring the continued and enhanced economic health of the Highlands Region. The program includes tools, incentives and assistance which are available to support municipalities and counties through the Plan Conformance process and in support of all Highlands stakeholders. The focus is on the objective of long-term, sustainable economic viability, not short-term economic activity.

The Council will conduct research with respect to existing and new economic development initiatives that can help promote and support the long-term integrity of the Region. These initiatives will address a variety of areas including heritage and eco-tourism, agri-tourism, business retention and improvement, land acquisition tracking, agricultural sustainability, land owner fairness concerns and enhanced growth and economic development. In order to ensure the viability of such Council initiatives, funding in the form of technical resources, planning assistance and grants is also anticipated. The program will monitor and evaluate the “Highlands Protection Fund” outlined in the Act for the purposes of RMP
compliance, property tax stabilization, planning incentives, watershed offset aid, and in support of regional initiatives.

The Economic Tracking Program will monitor and evaluate the health of the Highlands economy for a set of regionally available economic indicators. The program will provide essential information for consideration by Council as it seeks to meet the requirements of the Act, providing periodic evaluations of the performance of Highlands Region economic conditions. The information provided in the tracking program will also support development of the required economic plan element. The local economic plan element will be developed by conforming municipalities using the consistent economic indicators described in Economic Tracking Program description, below. As such, the tracking program will provide municipalities with the resources and data necessary to evaluate sustained economic vitality and economic development opportunities over time.

The fiscal monitoring component of the program includes the Cash Flow Timetable tracking mandated by the Highlands Act and the monitoring and tracking of municipal fiscal performance in support of conformance activities and regional shared service opportunities.

### Tourism Opportunities

Tourism is a major component of New Jersey’s economy. It is the second largest industry in the State and continues to be a significant revenue source for the State in terms of billions of dollars annually and provides approximately 500,000 tourism-related jobs statewide. The tourism component seeks to recognize the Region's historic, cultural, recreational and scenic locations not just as tourism resources, but as economic assets which can be developed and enhanced in a sustainable manner adding much benefit to local economies.

The program includes coordination with the Office of State Tourism to promote agri-tourism and eco-tourism activities to support the farm economy by allowing farmers to benefit from additional sources of income; and coordination with historic preservation, open space and recreation efforts as a means to link agricultural preservation/retention efforts; and the development of economic development incentives that include flexible land use regulations to support the expansion of food and farm-related businesses. (See [Historic Resource Protection Program](#), [Scenic Resource Protection Programs](#) and [Agricultural Sustainability and Management Program](#) for addition details)

The program components include:

1. Identification of the necessary elements of a sustainable and comprehensive tourism program for the Highlands Region that both takes advantage of and sustains the Region’s environmental, historic, cultural and scenic resources.
2. Establish a certified eco-, agri- and heritage tourism program through a cooperative effort among appropriate agencies.
3. Evaluate the feasibility of establishing transit-oriented tourism connections and opportunities.
4. Evaluate the economic feasibility of alternative forms of overnight accommodations to promote recreation and tourism.
5. Coordinate with NJDEP and New Jersey Commerce, Economic Growth and Tourism Commission on innovative ways to market and expand the Region's recreation and tourism resources in a sustainable manner.

### Agricultural Vitality

This program will monitor and evaluate agricultural economic metrics for the Highlands Region in coordination with the United States Department of
Agriculture, New Jersey Department of Agriculture, New Jersey Board of Agriculture, County Agriculture Development Boards, and additional sources as appropriate. It will utilize data from national, state, county and local resources to evaluate regional conditions and performance. (See Agricultural Management and Sustainability Program for additional details).

The program component will evaluate data including but not limited to the following:

1. Farmland Assessed Data as it relates to Agricultural Land Use types, Agriculture Crop types and yields, specialty crops, and livestock types.
2. Value of Farm Land and buildings.
3. Net Cash Farm Income.
5. Benefit to community if farms are permitted second businesses.

**Economic Efficiency**

This program will monitor the efficiency of land development practices, and opportunities for value added economic development of development and redevelopment activities in the Region. It will coordinate with various municipal and county conformance elements and evaluate performance of RMP initiatives throughout the Region. It will also monitor the Highlands Development Credits Program and support the tracking of exemptions and waivers in accordance with the Act.

The program will serve as an opportunity to maximize connections of local expertise and knowledge with regional initiatives and economies to support efficient land development practices, infrastructure investment and performance, enhanced services and resource protection. The program tracking will include: monitoring of development and redevelopment activities, number of residential units and employment generated along with the number of acres that are redeveloped or developed, the infrastructure needs and capacity, and resource protection or enhancement measures. The information will provide a perspective on RMP economic efficiency initiatives and identify additional program refinements that may be required overtime. (See Redevelopment Program, Housing and Community Facilities Program, Land Preservation Program, Cluster Development Program and Plan Conformance Program for additional details.)

**Regional Master Plan Funding**

In recognition of the costs associated with municipalities and counties conforming to the RMP, the Highlands Act provides funding, planning and technical assistance to avoid placing undue financial burdens on these entities. It is recognized, however, that the current funding available to Council for the purposes of RMP implementation will not cover all associated costs. The Act also prescribes the tracking of certain fiscal information through the development of a Cash flow timetable.

This program tracks and assesses data, provides technical assistance and funding and includes but is not limited to the following:

1. Track and update revenues and costs associated with the Cash Flow Timetable including: Highlands Planning Grants Program, which includes Incentive Planning Aid and Regional Master Plan Compliance Aid; Highlands Property Tax Stabilization Aid; State Aid for Local Government Units and in support of Land Acquisition
2. Provide funding and technical assistance to eligible municipal and county governments for the purposes of revisions to their master plans,
development regulations, and other regulations through RMP Compliance and Incentive Planning Aid.

3. Provide planning grants and technical assistance to be used by municipalities for special projects including the preparation of case studies relevant to Plan Conformance.

**Economic Tracking Program**

This program addresses the need for a continual evaluation of the health of the regional economy as it compares to the rest of the State and its regional counterparts. As the RMP moves towards implementation, it is critical that there be a means to assess the long-term economic trends of the Region and thereby seek to gain insight regarding the effects of the RMP on a number of tangible economic indicators. It is important to understand and capture what a sustainable economy means to the region and support sustainable practices. The economic impact of certain land use restrictions associated with RMP implementation is of major interest to landowners, residents and businesses in the Region. As such, this program will look to refine and enhance baseline economic data and examine requests for expanded and additional regional economic indicators for Region. It will present data and describe trends in the context of sustainable economic practices and it will include areas of population, demographics, socio-economics, real estate, efficient land development practices, land preservation and municipal finance.

The primary purpose of the program will be to establish a means for evaluating economic segments over time so that Highlands-related trends can be distinguished from general trends, regarding factors such as jobs to housing relationships, community and housing diversity, business mix, performance of local economic support programs, and community facilities. Conforming municipalities and counties will support the program by tracking data through the Economic Plan Element. The information will also support the development of information in support of performance milestones for the RMP Monitoring and Improvement program.

This program initially will track the following and is subject to enhancement and refinement as required:

**Population (Distribution and Age Demographics)**

1. Household units (Age and Type of Structure)
2. Building Permits (New Construction and Rehabilitation units)
3. Property transactions
   - Median Selling Prices of Existing and New Homes
   - Volume of Real Estate Transactions
   - Preserved Open Space and Acquired Lands
4. Income (Per Capita and Per Household Income)
5. Employment
   - Unemployment
   - Number of Establishments
   - Payroll by Major Industry Sector
   - Retail Sales & Establishments
6. Property Tax (Property Tax Bills and Rates - County, Municipal, School)
7. Property Values

**Tourism Funding**

The Highlands Council shall seek to develop a funding source to promote agritourism and eco-tourism in the Highlands. This will support and enhance the economy.
Land Use

Municipal zoning within the Conservation Zone should permit agri- and eco-tourism uses in this district, particularly when they are part of an established agricultural use and increase the economic health of the farm unit.

Municipal zoning within the Environmentally Constrained Conservation and Existing Communities Zones should permit agri- and eco-tourism uses but with additional standards to prevent degradation of natural resources.

Part 9. Air Quality

<table>
<thead>
<tr>
<th>Air Quality Improvement</th>
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<tbody>
<tr>
<td><strong>Issue Overview</strong></td>
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<tr>
<td>Clean air is a defining element of the unique character of the Highlands Region. While air quality is affected by activities in areas beyond the borders of the Highlands Region and the State, it is important that municipalities and counties address local air quality concerns in order to ensure that National Ambient Air Quality Standards (NAAQS) are met.</td>
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<tr>
<td><strong>RMP Policies and Objectives Addressed</strong></td>
</tr>
<tr>
<td>Policy 9A1. To encourage capital facility development and redevelopment that leads to attainment of the National Ambient Air Quality Standards (NAAQS).</td>
</tr>
<tr>
<td>Policy 9A2. To monitor performance of major air toxic point sources that affect the Region and promote source reduction measures to address quality concerns.</td>
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<tr>
<td>Policy 9A3. To encourage land use development and redevelopment practices that promote center-based growth and mixed-use development and offer alternative modes of transportation as a means to reduce automobile dependency, vehicle miles traveled, vehicle trip length, and duration, for the reduction of local and regional air pollutants and of carbon dioxide emissions linked to global warming.</td>
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<tr>
<td>Policy 9A5. To implement resource protection standards to provide for the protection of air quality on a site-specific basis during local development review and Highlands Project Review.</td>
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<tr>
<td>Objective 9A5a. Encourage plans for development activities to include an evaluation of auto emissions, ambient air toxics, and hazardous air pollutants.</td>
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<tr>
<td><strong>Program Summary</strong></td>
</tr>
<tr>
<td>The program should focus on meeting the NAAQS which require not only the review of new development, but the monitoring of general air quality and stationary source pollution within the Highlands Region. There are both development and redevelopment strategies which can indirectly enhance air quality by reducing vehicle miles traveled, as well as the review of pollution from stationary sources throughout the Highlands to ensure standards are met. Air quality monitoring is also an effective way to evaluate progress in the Highlands Region and determine if current efforts are achieving the desired results.</td>
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<tr>
<td><strong>Encourage Capital Facilities That Meet Standards</strong></td>
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<td>The Highlands Council should encourage the development of governmental or utility investments in the Highlands that contribute to the meeting of the NAAQS goals. It shall review private sector investments in stationary sources to</td>
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ensure that those investments meet the NAAQS goals. The Council shall also encourage and support development of air quality plans that seek to reduce levels of ozone, sulfur dioxide and fine particulate matter pollutants in the Highlands Region.

Monitoring

The Highlands Council shall coordinate with NJDEP and counties to ensure operation of a monitoring program for the Highlands Region that provides a regional and sub-regional analysis of air quality conditions based on monitoring sites. Recommendations will be made for additional monitoring sites if needed. Where monitoring or modeling determines pollutant levels which need to be reduced, the Council shall coordinate with NJDEP to reduce relevant sources of pollution.

Land Use Planning

Sound land use planning based on smart growth principles can have very positive implications for air quality in the Highlands Region. By targeting a balance of jobs and housing, and concentrating development around multi-modal transit hubs, both vehicle trip lengths and vehicle miles traveled can be significantly reduced. As automobiles contribute 40% of the airborne pollutants and 80% of the airborne carcinogens in the region, these reductions can improve overall regional air quality. (For more information on land use and transportation planning, see Transportation Safety and Mobility Program - Linking Transportation and Land Use)

Resource Protection and Site Design Standards

The use of clustering, resource protection standards and landscape regulations shall be used to promote air quality. The following represent some of the tools available:

- Maintaining forested area by acquisition, sale of Highlands Development Credits, and clustering, will assist in maximizing the retention of forested areas which mitigate pollutants.
- Landscaping requirements that increase tree canopy cover on streets and lots can offset pollutant loads and cut energy use through a reduction in demand for heating and cooling.
- Guidelines or regulations that encourage the use of renewable energies, promote energy conservation and reduce demand for energy from high emission power plants
- Encourage the adoption of LEED-based building codes to reduce energy consumption.
CHAPTER VI. IMPLEMENTATION

The Highlands Regional Master Plan establishes a resources planning and management framework for the Highlands Region. The Highlands Regional Master Plan, however, is not self-executing and will require the concerted effort of agencies at all levels of government, the general public, property owners and private industry.

The Highlands Council is the lead agency responsible for the implementation of the Highlands Regional Master Plan. The Council has several critical implementation responsibilities including:

- preparation of implementation documents including model ordinances, handbooks, technical guides, bibliographies of substantive literature
- administration of local government conformance proceedings including review and approval of revised master plans and development regulations
- project review
- public education
- provision of financial and technical assistance to local governments
- creation and administration of Highlands Development Credit program
- formation of the Highlands Credit Bank
- advocacy at the State and federal level for funding of RMP implementation, including land acquisition
- monitoring and updating of the Regional Master Plan

These functions are addressed below in the following categories and programs:

- Regional Master Plan Conformance, Consistency and Coordination
  - Plan Conformance – including the administrative, grants and technical assistance aspects
  - RMP Updates and Map Adjustments
  - Federal, State and Regional Agency Coordination
  - Local Participation
- Highlands Project Review
  - Project Review Process
  - Project Review Standards
- Improvement of the Regional Master Plan
  - Water Resources and Ecosystem Science Agenda
  - Regional Master Plan Monitoring
## Part 1. Regional Master Plan Conformance, Consistency and Coordination

### Subpart a. Plan Conformance

#### Issue Overview

Municipal and county conformance with the RMP (Plan Conformance) is the overall goal for implementation of the various elements of the Plan. The Highlands Act establishes the requirement that all municipalities and counties with land in the Preservation Area bring their local plans and development regulations into conformance with the “goals, requirements, and provisions of the regional master plan.” Voluntary conformance for municipalities and counties with land in the Planning Area is also provided for in the Act, which outlines the benefits that shall accrue to those municipalities and counties that conform.

#### RMP Policies and Objectives Addressed

This program relates to most components of the RMP regarding the modification of municipal master plans, zoning ordinances and development review ordinances for Plan Conformance, and regarding the modification of county master plans and development review requirements for Conformance.

#### Program Summary

Plan Conformance is intended to align municipal and county plans, regulations and programs with the goals, requirements and provisions of the RMP. The process to achieve that conformance will be logical, time efficient and comprehensive. The conformance process will begin with the development of detailed guidance for municipalities and counties, which will be provided along with planning and technical assistance from the Highlands Council. Each municipality and county going through the conformance process will follow a general approach that includes an assessment of current plans and regulations, an evaluation of future planning needs and conditions, modification of plans and regulations as necessary, and a public involvement process. The Highlands Council will review Petitions for Plan Conformance and decide to approve, approve with conditions or reject the petitions. Conformance approval will in most cases be with conditions, where a finding is made that the municipality or county has conformed with all immediate mandatory Conformance requirements, and will conform with all other mandatory Conformance requirements within an agreed upon implementation schedule. The Highlands Council will then track progress of the municipality or county in meeting that schedule, and will monitor development reviews and capital projects for compliance with the conformance approval.

#### Plan Conformance Guidelines

The Highlands Council will prepare and distribute to all Highlands municipalities and counties Plan Conformance Guidelines outlining the procedures for Plan Conformance. The Plan Conformance Guidelines will include a matrix outlining all of the immediate mandatory elements, the long term mandatory elements, and the discretionary elements. The Guidelines will outline the details of each Conformance element in detail. The Guidelines will also provide descriptions and criteria for all of the associated grant programs that will be available to municipalities and/or counties in support of Plan Conformance.

#### Planning and Technical Assistance

The Highlands Council has assembled a significant amount of data and analyses relative to the Region and will make this information available to municipal and county representatives prior to commencement of Plan Conformance.

The application of the Land Use Capability Map Series to individual municipalities will involve translating the boundaries in the LUCM Series to a more refined scale and to reflect local conditions. In order to ensure that
municipal mapping of the Land Use Capability Zone Map is consistent with the goals, policies and objectives of the RMP, RMP Updates and Map Adjustments may be made during Plan Conformance.

The Highlands Council website will continue to serve as a means for sharing current technical data and Plan Conformance information. The Council will provide information in support of Plan Conformance to each municipality and county. The information will include but not be limited to: the Highlands Build out analysis, Highlands Resource data layers, the LUCM Series and supporting data layers, and various discretionary Plan Conformance tools. This information will support local knowledge and planning during Plan Conformance.

The Highlands Council will make grant funds and other financial and technical assistance available to Highlands municipalities and counties to support any revision of their master plans, development regulations or other regulations which are designed to bring those plans or regulations into conformance with the RMP or the implementation of a transfer of development rights program (see Grant Programs, below).

The Highlands Council staff will be available to offer planning and technical assistance throughout Plan Conformance and during municipal and county implementation of the elements of the RMP. Additionally, funding will be available in the form of grants to municipalities and counties to further assist them in implementing the elements of the RMP.

Overview Meeting – After the adoption and release of the RMP, the Highlands Council will host a series of meetings throughout the Highlands Region to explain the elements of the Plan and the ensuing Plan Conformance process. Attendance at an Overview Meeting will be mandatory for Preservation Area communities and Planning Area communities that desire to participate in the Initial Municipal Assessment Grant Program. Subsequent to the Overview Meeting, municipalities and counties that intend to pursue Plan Conformance shall submit a letter to the Highlands Council indicating their decision. This “notice of interest” shall be accompanied by a duly adopted resolution authorizing the action.

Municipal Process – The municipal Plan Conformance process will commence with a thorough analysis of all municipal planning, zoning and development documents and regulations. The municipality may choose to work jointly with neighboring municipalities, such as those assembled during the Overview Meeting on issues of common interest or where economies of scale may be achieved through joint analysis.

During the time that the analysis is being conducted, the municipality is encouraged to conduct a community visioning session(s) to involve the local public and to develop or confirm a representative vision of their community for the future. The results of the community visioning shall be included as part of the Petition for Plan Conformance. The municipality will be required to hold a public hearing on the municipal assessment findings and conclusions. The Highlands Council will provide templates and guidelines to be utilized to record the findings and conclusions. These shall be incorporated into a Municipal Assessment Report which will be submitted to the Highlands Council as part of the municipality’s Petition for Plan Conformance. The Municipal Assessment Report will detail the findings and conclusions of how well municipal plans, regulations and programs support the goals, requirements and provisions of the
The Petition for Plan Conformance shall be the formal submittal to the Highlands Council from a municipality for consideration of Plan Conformance. The Petition shall include the Municipal Assessment Report, the community vision (if available), and all supporting documentation, i.e., municipal master plan, zoning ordinances, resource protection ordinances.

In order to meet the requirements of Plan Conformance for immediate mandatory items, the municipality must adopt by reference the elements of the Highlands Regional Master Plan related to critical natural resources, the Housing Element, Highlands Build out analysis, water availability and water quality, water conservation measures, and septic system density standards. The Plan Conformance Guidelines will include a table specifying the policies and objectives which are immediate mandatory items and must be adopted by reference by the municipality in order to be eligible to receive Plan Conformance approval.

A series of long-term mandatory items will be made a condition of approval and must be accomplished according to an established schedule. The municipality may also pursue Plan Conformance with discretionary items and these will be included in the approved schedule.

Municipalities may seek the designation of centers, cores, and nodes through Plan Conformance by proposing such a designation in a Petition for Plan Conformance that is both consistent with the State Development and Redevelopment Plan's (State Plan) criteria for center, core and node designation and is in conformance with the Regional Master Plan. Designated centers, cores and nodes in the Highlands Region may include the full range of types afforded by the State Plan.

The Highlands Region includes 20 existing designated centers (see figure State Planning Commission Designated Centers). The figure includes the expiration dates of these designated centers in order to identify the timeframe within which the Highlands Council and the State Planning Commission may examine the potential reestablishment of any expiring center designations through the Plan Conformance or Plan Endorsement process. The figure additionally provides an overview of the intersection of the boundaries of the existing designated centers and the Council’s Land Use Capability Zone Map. This information and the additional information in the RMP will allow municipalities, the Council and the State Planning Commission to reassess the designated center boundaries to ensure protection of Highlands resources and identification of appropriate areas for growth.

County Process – The county Plan Conformance process will commence with an analysis of all county planning and development documents and regulations. Specifically the counties will be responsible for plans and regulations which affect wastewater management, farmland preservation, recreation and open space, circulation and stormwater management. Counties may choose to work in coordination with their constituent municipalities. The county is encouraged to participate in the community visioning events of their constituent municipalities and/or may choose to hold a county-wide visioning session.

In order to meet the requirements of Plan Conformance for immediate mandatory items, the county must adopt by reference the elements of the RMP related to water availability and conservation measures. The long-term
Legend

Designated Centers
- Designated Center Boundaries

Overlay Zone Designation
- Protection
- Conservation
- Existing Community

Sub-Zone
- Lake Community
- Conservation Constrained
- Existing Community Constrained

Roadway Network
- Interstate Highways
- Lakes Greater Than 10 Acres

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Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2007
New Jersey Office of Smart Growth, 2007
mandate items which will be accomplished according to an established schedule include Wastewater Management Plans, Comprehensive Farmland Preservation Plans, Recreation and Open Space Plans, County Circulation Plans and Stormwater Management Plans.

The county shall hold a public hearing on the county assessment findings and conclusions. The Highlands Council will provide templates and guidelines to be utilized to record the findings and conclusions. These shall be incorporated into a County Assessment Report which will be submitted to the Highlands Council as part of the county’s Petition for Plan Conformance.

The Highlands Council will convene a committee to review municipal and county Petitions for Plan Conformance. The membership of the Committee may change based on the municipality or county being reviewed in order to avoid a conflict of interest for any Council member with review of a county or municipality petition. The Committee shall review the Municipal and County Assessment Reports, community visioning results, and all supporting documentation and make recommendations to the Highlands Council for each Petition to be approved, rejected or approved with conditions. It is anticipated that all Plan Conformance approvals will have conditions attached, at a minimum outlining all of the long-term mandatory items of Conformance.

If a Petition is rejected or approved with conditions relative to the immediate mandatory elements of Plan Conformance, the notification will be accompanied by a specific listing of the actions the municipality or county must take in order to receive a Plan Conformance approval.

Approval of Plan Conformance shall last for a period of six years or, for municipalities, until the next municipal reexamination of the municipal master plan if less than six years. Upon notification of approval, the municipality or county shall be eligible for all of the benefits of Plan Conformance including:

1. **Strong Presumption of Validity, Extraordinary Deference, and Burden of Proof** – A strong presumption of validity applies to master plans, land use ordinances and local decisions of municipalities and counties that are in conformance with the RMP. If a conforming municipality or county is challenged in court, the actions they have taken to conform to the RMP shall be given extraordinary deference and the burden of proof shall be on the plaintiff to prove that the municipality or county acted in an arbitrary, capricious or unreasonable manner.

2. **Legal Representation** – The Highlands Council will provide legal representation, when requested, to any conforming municipality or county that requests when their actions or decisions taken on the basis of Conformance are legally challenged.

3. **Planning Grants** – The Highlands Council is authorized to provide grants for the reasonable expenses associated with modifying master plans and land use ordinances to make them conform to the Regional Master Plan.

Approval of Plan Conformance is equivalent to Plan Endorsement by State Planning Commission and brings with it the benefits of Plan Endorsement, such as State aid, planning assistance, technical assistance, and other benefits awarded by the State.
requirements of the RMP and the associated Plan Conformance and implementation process.

*Initial Assessment Grant Program*

The purpose of the Initial Assessment Grant is to enable municipalities and counties to conduct an initial review of the policies and requirements of the RMP to determine the level of effort anticipated for the municipality or county to conform to the RMP. The Initial Municipal Assessment Grants will support an early and preliminary assessment on the part of the municipality and county and will not obligate them in any way to commit to Plan Conformance for the Planning Area in the future.

The funding assistance is to be used to review existing land use planning, development and regulatory documents and mechanisms against the policies, strategies and implementation techniques contained in the RMP.

The Initial Assessment Grant program will accept applications from municipalities and counties located within the Highlands Region.

*Plan Analysis and Conformance Grant Program*

Municipalities and counties within the Preservation Area are required to participate in Plan Conformance to bring their local planning and zoning into conformance with the RMP. Those municipalities within the Planning Area may, after completing the Initial Assessment, choose to participate in Plan Conformance. Any municipality or county that submits a “notice of interest” to take part in Plan Conformance will be eligible for grant funding to help offset the costs associated with the process.

The Plan Analysis and Conformance grants will fund municipal and county work that builds on the initial assessment. Funds may be used to analyze local plans, regulations and programs and evaluate how well they support the goals, policies and objectives of the RMP. Funds may also be utilized to conduct community vision sessions, develop action plans that will align local decisions
with the RMP, conduct public outreach to involve and inform the people of the community, and to prepare the Municipal or County Assessment Report.

**Immediate Mandatory Elements of Conformance Approval**

As part of a municipality’s or county’s Petition for Plan Conformance, certain elements of the RMP must be adopted and enacted to receive Highlands Council conformance approval. The Plan Analysis and Conformance Grants are intended to also assist local governments in implementing these requirements. The immediate mandatory requirements will be summarized in the Plan Conformance Guidelines, during the Overview Meetings and during conformance discussions.

*Highlands Implementation Grant Program*

**Long-term Mandatory Elements of Conformance Approval**

As a condition of Plan Conformance approval, additional elements will be required of each conforming municipality and county unless they already conform to these elements as part of their initial Petition for Plan Conformance. A schedule will be established to outline each element and the timeframe in which they must be achieved. The Highlands Implementation Grants will be made available to assist municipalities and counties in actions to implement these requirements. They may include additional resource protection standards, fiscal sustainability measures, certain development standards, and historic and scenic resource protection methods.

**Highlands Incentive Planning Aid Grants**

The Highlands Incentive Planning Aid Grants are intended to fund planning and science projects which advance the goals, policies and objectives of the RMP, but are not mandatory requirements of Plan Conformance.

**Discretionary Elements of Conformance Approval**

The RMP contains a range of policies and objectives and associated elements that the Highlands Council is committed to as part of the future vision of the Highlands, but have been deemed discretionary. Highlands Incentive Planning Aid Grant monies will be available to initiate important elements of the RMP through planning studies on targeted issues. Sample projects that may be eligible include planning for brownfield and grayfield redevelopment, town center/transit village development, and local and regional economic development strategies.

**Transfer of Development Rights (TDR) Grants**

The Highlands Council has established a $1 million Voluntary Receiving Zone Feasibility Grant Program. This grant program is designed to assist municipalities in assessing the potential for locating a receiving zone within their communities. Eligible municipalities will receive both financial support and technical assistance from the Council. Participation in the grant program requires a commitment by a municipality to fully evaluate the feasibility and desirability of designating a receiving zone. Additional grant funding will be made available to offset the costs of implementation of a TDR program.

**Compliance Component**

Once a municipality or county has received Plan Conformance approval, they have an obligation to maintain the plans, ordinances and regulations that brought them into conformance. They may not adopt additional plans, ordinances or regulations which are contrary to the mandatory elements of the
According to the Highlands Act, “the council may revoke a conformance approval granted . . ., after conducting a hearing, if the council finds that the local government unit has taken action inconsistent with the regional master plan.” Section 14.c.

Municipal and county Plan Conformance will be periodically verified through the Grants Program with the submission of a required status report. If the council revokes a Plan Conformance approval for a municipality or county that has received grants or funding based on their conformance status, they may be required to return those funds to the Council.

### Subpart b. RMP Updates and Map Adjustments

#### Issue Overview

The RMP addresses the requirements of the Highlands Act to provide guidance to municipalities and counties for the implementation of the resource protection and smart growth policies during Plan Conformance. The Highlands Council recognizes that the RMP was created at a regional scale and that new, updated or additional information available at the federal, State, county, municipal or public level may become available. The RMP Updates and Map Adjustments Program outlines the processes for making RMP Updates and Map Adjustments to the numerous components of the RMP including the Land Use Capability Map Series (LUCM Series), other RMP maps, and supporting base data layers, and the tracking of these changes.

#### RMP Policies and Objectives Addressed

**Policy 6A1.** To use the Land Use Capability Map Series (LUCM Series) as a geographic framework for land use planning and management within the Highlands Region.

**Objective 6A1a.** A Highlands Land Use Capability Map Series based on the most current and available data.

**Policy 6A2.** To develop a program for RMP Updates for all substantive components of the RMP, based upon the receipt of new, corrected or updated factual information and verification by the Highlands Council, when and where necessary to improve the accuracy of the RMP.

**Policy 6A3.** To develop a program allowing the approval of municipal and county petitions (with accompanying municipal support by resolution) for Map Adjustments to the LUCM Series and other RMP maps, other than the RMP Updates addressed in Policy 6A2. Such Map Adjustments must be supported by a demonstration that they: (1) comply with the intent of the RMP, (2) are based on municipal and county planning that results in a no net increase in land use intensity from the existing LUCM Series and RMP policies, (3) support both smart growth and resource preservation, (4) provide a no net loss of Highlands resources and resource values within the municipality or HUC14 subwatershed such that all Map Adjustment protections are equal to or exceed, on a whole, the protection provided by the existing LUCM Series and RMP policies, and (5) do not result in the change in Zone, Sub-zone or Resource Area designation of any area outside of the Map Adjustment area as an indirect result of the Map Adjustment. In any case where the Map Adjustment involves a proposed adjustment to the Highlands Land Use Capability Zone Map designation from the Protection or Conservation Zone to Existing Community Zone, the demonstration must additionally meet at least five of the following standards:

- creates a meaningful opportunity for the use of Highlands Development Credits;
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- reduces the net impact on Highlands natural and agricultural resources;
- improves Highlands agricultural resources or agricultural viability;
- eliminates substandard wastewater treatment facilities;
- contributes to the elimination of net water availability deficits in HUC14 subwatersheds;
- creates meaningful opportunities to provide affordable housing;
- creates meaningful employment opportunities for the residents of the Highlands Region in terms of the quantity and quality of jobs;
- improves the balance of housing and employment in a manner which reduces the length of home/work trips within the Highlands Region;
- promotes the use of alternative modes of transportation, including transit; or
- provides uses and facilities which promote eco- and/or agri-tourism.

Program Summary

The RMP includes a process of RMP Updates and Map Adjustments to provide factual updates to the RMP, and for other adjustments to the LUCM Series and other RMP maps at the municipal and county level after the adoption of the RMP. RMP Updates and Map Adjustments involve an iterative process and exchange of information between the Highlands Council and local government units and are intended to result in improvements to the RMP and supporting data base information.

The following are examples of RMP Updates:

- On-going updates made by the Highland Council to RMP spatial base layers (for example, Land Use Land Cover updates, new Landscape Project Data, or newly acquired preserved lands);
- Updates made during the Plan Conformance process including factual updates identified at the municipal and county scale; and
- Updates made during Highlands Project Review (including but not limited to the designation of Highlands Redevelopment Areas, WQMP amendments, and Capital Projects).

In contrast to the RMP Update process which is based on updated factual information, the Map Adjustment process serves as a mechanism to adjust the LUCM Series and other RMP maps based on policy decisions approved by the Highlands Council during Plan Conformance or upon the submission of a Map Adjustment Petition by a Highlands Region municipality or County.

RMP Updates – Highlands Council Base Layers

The Highlands Council has developed numerous spatial data layers in support of the RMP. Some were used directly to develop the LUCM Series, while others will be used primarily for Plan Conformance or Project Review. The Highlands Open Water Protection Area data layer is an example of a base data layer that was not used for the development of the LUCM Series, but will be used during Plan Conformance and Project Review. Some of these base data layers are updated regionally or statewide on a periodic basis by State or federal agencies or will be updated by the Highlands Council. Where a base layer is updated on this scale, the Highlands Council will periodically investigate the extent to which RMP Updates are appropriate using the new information.

In addition, base data layers will need to be updated on a more local or even site-specific level based upon more detailed information available at that scale. Finally, RMP Updates are anticipated through the Plan Conformance process, Project Review, and Highlands Council initiated updates (see below).
RMP Updates may be made by the Council where new information is presented and verified that changes the underlying assumption about conditions present in the area that were considered during the development of the RMP. RMP Updates must be based on data from published sources or other documented reliable sources acceptable to the Highlands Council. Changes shall be made based on the mapping and other criteria used to develop the RMP. These general data updates may occur when new information about areas or sites suggests that the RMP does not accurately reflect land conditions. RMP Updates in response to local and site-specific factual information will be made on an on-going basis. Submissions may come from conforming municipalities and counties, as well as non-conforming municipalities, using the Digital Submission Standards discussed below.

RMP Updates related to the LUCM Series will be based upon updates to the Highlands Council base layers and indicators. Not all RMP Updates to the base layers will result in a change to the LUCM Series. In order to develop the LUCM Series, the Highlands Council used a modeled approach, called the Land Use ANalysis Decision Support (LANDS) model. The LANDS model uses a series of resource indicators and a set of geographic and planning rules, according to which, overlay zones were assigned for the Land Use Capability Zone Map. The Land Use Capability Zone Map will only change if RMP Updates made to the base data layer result in a different overlay zone assignment when analyzed through the LANDS model.

For example, a petitioner may petition the Highlands Council for RMP Updates to the wastewater service existing area served (EAS) data layer. Upon verification of the information by the Highlands Council, the RMP update would be made to the Highlands EAS base data layer. A change to the Land Use Capability Zone Map would only be made if the rerun LANDS model output would result in a change in zone assignment for the area in question. However, the corrected EAS data layer will serve to support Plan Conformance and Project Review.

As a second example, a large development to be built in an environmentally sensitive area is found to be exempt from the Highlands Act based on prior approvals. In this instance, the new information would reveal that despite the site’s sensitive features; the mapped resource features of the site may require an RMP Update due to the exempted approvals and scale of the development. As with the prior example, the change may or may not lead to a change in the Land Use Capability Zone Map, but would be reflected in future reviews.

The Highlands Council recognizes that planning is a dynamic process and the LUCM Series represents a snapshot in time and a specific and regional interpretation of how available geographic data should be represented. Therefore, the Council has established protocols for evaluating the LUCM Series and other RMP Maps during and after the Plan Conformance process.

All requests for a Map Adjustments to must be submitted by a Highlands Region municipality or county (with accompanying municipal support by resolution) as a Petition for Map Adjustment or as part of a Petition for Plan Conformance. Such Petitions, based on local conditions (other than for general data and informational RMP Updates as discussed above), may be approved by the Highlands Council upon a finding that the proposed Map Adjustment is consistent with the goals, policies and objectives of the RMP. Such Map Adjustments requests must be supported by a demonstration that they meet the
The Highlands Council makes no representations of any kind, including, but not limited to, the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied with respect to the information contained on this map.

The State of New Jersey shall not be liable for any actions taken or omissions made from reliance on any information contained herein from whatever source nor shall the State be liable for any other consequences from any such reliance. Additional sources of information may include NJDOT and NJDEP GIS digital data, but this secondary product has not been verified by NJDOT or NJDEP.

Highlands Regional Master Plan
Final Draft, November 2007

Sources:
New Jersey Highlands Council, 2006
New Jersey Department of Environmental Protection, 2006
requirements described in Policy 6B3. The demonstration for the Map Adjustment must be prepared by a duly licensed professional and must be submitted with an authorizing resolution.

Map Adjustments made during Plan Conformance or as a result of a Petition for Map Adjustment will help ensure that the RMP considers the most up-to-date information and that the LUCM Series recognizes the current conditions within a conforming municipality. Any Map Adjustments made as a result of the Plan Conformance process or as a result of a Petition for Map Adjustment will be effective immediately for the conforming entity or the area in question.

Map Adjustments to the RMP and LUCM Series may also be made based upon Highlands Project Reviews only at the initiative of Highlands Council. The Highlands Council is legislatively charged with reviewing proposed projects in the Highlands Region for consistency with the goals, requirements and provisions of the RMP. While the Council has the authority to comment on any project that requires federal and/or state agency permit approvals, reviews are specifically triggered by the categories identified in the Project Review Program.

Review of projects may result in Map Adjustments based on the provision of more detailed or updated information specific to the site in question. Similar to the Map Adjustments relating to Plan Conformance or Petitions for Map Adjustments, changes will be made to Highlands Council baseline data layers and indicators, which may result in an adjustment to the LUCM Series. Any Map Adjustments made as a result of the project review will be effective immediately for the municipality or area where it has occurred.

For all RMP Updates and Map Adjustments, the digital submission standard will assist the Highlands Council and its participating entities in receiving, processing, utilizing, maintaining and disseminating digital data. All digital submissions shall meet the following minimum requirements:

1. All digital maps shall be submitted as GIS shape files in New Jersey State Plane Coordinate System (NAD83 horizontal and NAV88 vertical) or the most current State Plane Coordinate System and in an ARCGIS compatible format.
2. All accompanying digital documents including reports, narrative descriptions and tables shall be submitted in Microsoft Word, Excel or compatible format.

Any submissions to the Highlands Council that do not satisfy the requirements shall be deemed incomplete and no further action shall be taken. See the Highlands Digital Standards for the complete submission standards.

All Council approved RMP Updates and Map Adjustments will be documented and publicly available. To provide an accurate picture of the progression that the RMP and LUCM Series takes over time, RMP Updates and Map Adjustments that are made shall be maintained in a database and as GIS spatial data in accordance with Highlands data management and data sharing protocols.

The Highlands Act requires a coordination and consistency component which details the ways in which local, State, and Federal programs and policies may best be coordinated to promote the goals, purposes, policies, and provisions of the RMP, and which details how land, water, and structures managed by
For a regional planning initiative to succeed, a substantial amount of participation and coordination is required from all levels of government. In addition to the 88 constituent municipalities and seven Highlands counties that will play a large role in implementing the RMP, it is necessary for the Council to incorporate thorough and effective interaction and coordination with federal and State agencies. Coordination with the seven county planning departments in support of both county and municipal Plan Conformance as well as RMP data management and data sharing is also a critical component.

This extraordinary degree of cooperation is vital in order to achieve the most positive, sustainable outcome for the environment and economy of the Highlands Region, and thus the quality of life for all who live and work here or benefit from its resources. Establishing a process based on the consistent treatment of factors at all levels of government is key to the success of regional policies and initiatives.

State level coordination between the Council and the Department of Environmental Protection will be particularly important due to the requirements of the Act that establish stringent regulatory standards for development in the Preservation Area administered by the Department and the provisions in NJDEP regulations at N.J.A.C. 7:38-1.1(g) though (l), which require that consideration and weight be given to this Plan.

The Highlands Act provides that any municipality or county located entirely or in part in the Preservation Area shall be exempt from the State Planning Commission’s Plan Endorsement process and provides that the Council must consult with the State Planning Commission before approving, rejecting, or approving with conditions the revised plans and associated regulations of Planning Area municipalities and counties for lands in the Planning Area. Further, the Act provides that upon the State Planning Commission’s endorsement of the RMP, any municipal master plan and development regulations or county master plan and associated regulations that are found by the Council to be in conformance with the RMP shall be considered the equivalent of having those plans endorsed by the State Planning Commission.

Finally, regional coordination between the Highlands states (Connecticut, New York, and Pennsylvania) is necessary in order to address and implement comprehensive conservation measures, since regionally significant resources do not neatly follow political boundaries.

<table>
<thead>
<tr>
<th>RMP Policies and Objectives Addressed</th>
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<tr>
<td>Objective 1H1a. Create a coordinated and continually updated open space preservation data base of preserved lands and land stewardship activities by municipal, county, state and federal agencies, non-profit organizations and individuals</td>
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<tr>
<td>Objective 1H5a. Establishment of dedicated sources of state revenue to be used for open space preservation in the Highlands Region, such as coordination with NJDEP Green Acres Program for re-authorization of the Garden State Preservation Trust Fund, including a dedicated fund for the anticipated land acquisition needs of the Highlands Region, and enactment of a water user fee.</td>
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<tr>
<td>Objective 1H5b. Establishment of dedicated sources of State revenue for a reserve fund to capitalize the Highlands Development Credit Bank.</td>
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</table>
Objective 1H5c. Establishment of an on-going program to secure significant federal funding in support of land acquisition and stewardship efforts in the Highlands Region including, but not limited to, additional appropriations under the Federal Highlands Conservation Act.

Objective 1H5d. Establishment of an on-going program to seek funding for land acquisition and stewardship from unique sources of funding such as federal and state court-imposed fines for environmental damage, gifts, endowments and donations.

Objective 1H5e. Establishment of a dedicated source of revenue for the preservation and land stewardship of open space through a surcharge on public water supply system rates for any system that directly or indirectly relies on Highlands water resources for more than 5 percent of their annual needs.

Objective 1H6a. Coordination of Highlands Region priority open space preservation and land stewardship activities with the NJDEP Green Acres Program and the State Agriculture Development Committee with regard to land acquisition and preservation priorities in the Highlands Region.

Objective 1H6b. Coordination with NJDEP regarding the review of applications for Green Acres diversions for consistency with the RMP.

Policy 1H7. To promote the creation of a Highlands Water Protection and Planning Trust Fund to secure monies from alternate sources of funding to assist in land acquisition and stewardship.

Policy 1H9. To support legislation to extend the dual appraisal methodology used by the Garden State Preservation Trust for lands in the Highlands Region beyond the June 30, 2009 expiration date to a minimum of five years beyond adoption of the RMP.

Policy 1H10. To promote and facilitate the formation of an interagency working group comprised of representatives of appropriate federal, state and county agencies for the purpose of coordinating open space acquisition activities, including identification of high priority lands for preservation, land stewardship initiatives, and funding needs.

Policy 1J1. To promote the creation of a Forest Preservation Easement Program for the Highlands Region, which would be eligible for use through the State Agricultural Development Committee and the Green Acres Program.

Policy 1N1. To develop innovative financing and administrative mechanisms for the maintenance and operation of public and private dams and lakes, where those dams and lakes provide a continuing public or private purpose.

Objective 2B8e. Ensure, through NJDEP Water Allocation regulations, that any new or increased water allocation permits do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.

Objective 2B10e. Establish and implement best management practices for recreational, landscape irrigation and other practices through applicable State and federal programs.

Policy 2E2. To coordinate programs, funding and activities among public and private entities to encourage regional ground water recharge protection, restoration and enhancement activities consistent with the Plan.
Policy 2F2. To coordinate with NJDEP regarding a unified water quality assessment and the development and implementation of Total Maximum Daily Loads, where necessary, for all surface waters within the Highlands Region.

Policy 2F3. To coordinate with NJDEP regarding a unified ground water quality assessment, monitoring and attainment program.

Policy 2F4. To coordinate with NJDEP regarding efforts to monitor areas of known contamination to ground water resources within the Highlands Region and activities to remediate and restore water quality.

Policy 2F5. To coordinate with NJDEP and other agencies to identify impairments and implement improved regulatory actions and management practices that will also support the water quality goals of the Highlands Act.

Objective 2H1a. Coordinate with NJDEP to establish and maintain an inventory of Wellhead Protection Areas in or affecting the Highlands Region.

Objective 2J9b. Coordinate with NJDEP, water purveyors and water utilities to ensure that service areas and franchise areas are supplied by and consistent with sustainable yields from their designated sources.

Objective 3A9a. Coordinate with the State Forester to provide guidance for the development of Forest Management Plans that improve maintenance of ecosystem and water resource values of the Highlands Region.

Policy 3A13. To advocate for the amendment of the Farmland Assessment Act to permit the inclusion of credits for the control of invasive species, white-tailed deer reduction programs, and the water value of well-managed agricultural lands.

Policy 3A14. To work with the State Agriculture Development Committee and the Garden State Preservation Trust to establish incentives for any landowner in the Highlands Region seeking to preserve land under the farmland preservation program that would be provided in exchange for the landowner agreeing to permanently restrict the amount of impervious surface and agricultural impervious cover on the farm to a maximum of five percent of the total land area of the farm.

Policy 3B4. To coordinate with other municipal, county, State and federal agencies to ensure to the maximum extent practicable that other agency programs are coordinated with the resource protection requirements of the Highlands RMP.

Policy 4A6. To coordinate the Highlands Council’s activities with regard to the historic and cultural resources with the New Jersey Historic Trust and the State Historic Preservation Office.

Policy 5C2. To coordinate with NJ DOT, NJ Transit, North Jersey Transportation Planning Authority (NJTPA), counties and municipalities with regard to transportation planning and strategies within the Highlands Region.

Policy 5C8. To evaluate the existing and proposed Residential Site Improvement Standards (RSIS) in the context of the RMP and develop recommendations for amendments to minimize environmental impacts and maximize utility efficiency from new residential developments in a context-specific manner.

Objective 6K1a. Establish a Highlands Interagency Team to support and
expedite redevelopment and development activities that conform to the Plan.

Objective 6K1b. Encourage and support the use of planning and financing tools that are available through state agencies and programs.

Objective 6M1a. Any restoration of contaminated sites will be conducted in accordance with the criteria required by the NJDEP’s technical requirements for site remediation (N.J.A.C. 7:26E).

Objective 6M1b. Coordinate with NJDEP on Highlands Brownfield designations and in support of a mechanism that facilitates remedial activities within the Highlands Region.

Objective 6O1b. To develop an interagency partnership with COAH in support of a conforming municipality’s substantive certification plan development and regional affordable housing needs.

Policy 7E4. To seek and support priority allocation of available State and federal funding for Highlands municipalities which have established Receiving Zones for Highlands Development Credits

Policy 8A3. To pursue state and federal financial assistance for sustainable economic development in the Highlands Region.

Objective 8A4b. State agency coordination of economic development funding and programs that support Highlands Region development and redevelopment areas.

Objective 8B1a. Coordinated activities with the NJ Department of Agriculture and other entities to ensure that existing economic programs to sustain agriculture are maximized.

Objective 8B2a. Coordinated activities with the NJ Department of Agriculture and other entities to improve opportunities for sustainable agricultural operations that improve farm incomes and the long-term viability of farming.

Policy 8C4. To advocate for state and federal funding of recreation and tourism initiatives in the Highlands Region.

Policy 9A4. To encourage and support state and federal regulatory action to reduce levels of air pollutants including but not limited to: ozone, sulfur dioxide, and fine particulate matter pollutants in the Highlands Region.

Policy 9A6. To support State and federal initiatives that will reduce air pollution in Warren County and the Region due to out-of-State power plant air pollution.

Policy 10A1. To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State and federal agencies.

Program Summary

The purpose of this program is to establish a process based on the consistent treatment of factors at all levels of government to ensure the success of RMP policies and initiatives. Towards this end, a fundamental goal of this program is to establish or enhance interagency coordination to address critical issues such as environmental review procedures, land use regulation, affordable housing, land acquisition, agriculture, TDR, and Smart Design practices. Additionally, through this program, the Highlands Council will establish regular lines of communication and exchange technical information with representatives of the

Through proactive coordination with federal, State and county agencies the Council will promote the use of the RMP policies and standards to ensure the consistent protection of resources in the Highlands Region. Consistency is particularly important with those federal or State programs related to water supply availability, water quality, biodiversity conservation, and infrastructure capacity needed to handle growth.

**Creation of Interagency Committees**

The Highlands Council has established a State and Federal Agency Coordination Committee that will work with staff to develop the creation of Interagency Teams as needed to implement the RMP. The Interagency Teams will reflect the multiple modes of coordination that are required and will be dynamic and subject to change based on the nature of the issues at hand. The Interagency Teams may address critical coordination measures such as environmental review procedures, land use regulation, affordable housing, land acquisition, agriculture, Brownfields, TDR, historic and scenic resources, transportation and Smart Design practices. The Teams will serve in support of RMP policies, Plan Conformance reviews, and Project reviews as well as technical and planning partners in the implementation of RMP policies. The role of the Interagency Teams for all stakeholders is that it serves as a local and regional entity in support of Highlands’s issues and concerns.

**Coordination with Regional Agencies**

The Highlands Council will establish or enhance regular lines of communication and exchange technical information with representatives of the Federal Highlands Region in Connecticut, New York, and Pennsylvania. The Council will also ensure consistent coordination with relevant federal departments and agencies including the United States Departments of Agriculture, Interior, Commerce, Transportation, and Defense and the Environmental Protection Agency, as well as any federal departments and agencies that engage in activities that affect the Highlands Region. The Council will maintain liaison with each federal department or agency that administers or funds programs that affect the use of lands or protection of resources in the Highlands. These coordination efforts will encourage each federal entity to rely upon the RMP when their actions or decisions about programs, projects, or funding have the potential to affect the Highlands Region.

**Coordination with State Agencies**

The Highlands Council will ensure consistent on-going coordination with State agencies and between the Council and NJDEP. The Council will work with NJDEP to actively encourage NJDEP to utilize the RMP as the basis for establishing regulatory thresholds and standards. The Council will also work with NJDEP to develop a coordinated land use permitting strategy for lands subject to the NJDEP's Highlands Rules and the RMP's Preservation Area requirements. The Council will also develop a process to ensure consistent coordination with the New Jersey Departments of Agriculture, Law & Public Safety, Community Affairs, Education, Health and Senior Services, Treasury, and Transportation, and the NJ Commerce, Economic Growth and Tourism Commission on issues appropriate to their jurisdictions.

In order to aide municipalities where they seek the appropriate development, redevelopment, and preservation of appropriate lands within the Highlands Region, the Council will coordinate with the Economic Development Authority, New Jersey Redevelopment Authority, the Housing and Mortgage Finance Agency, the New Jersey Environmental Infrastructure Trust, the New Jersey Historic Trust, and the Garden State Preservation Trust to facilitate
funding and the institution of policies that help to implement the RMP.

To help ensure that new infrastructure and State funded public development is
guided to appropriate locations in the Highlands Region, the Council will work
with the Board of Public Utilities, New Jersey Transit, the New Jersey School
Construction Corporation, Department of the Treasury, and New Jersey
Building Authority.

The Highlands Council will take the following steps related to the State
Development and Redevelopment Plan:

- Within sixty days of adoption of the RMP, the Council will, as required by
  the Highlands Act, submit the RMP to the State Planning Commission for
  Plan Endorsement for the Planning Area of the Highlands Region;
- Coordinate with the State Planning Commission to resolve inconsistencies
  between the State Development and Redevelopment Plan and Map and the
  Highlands RMP and Land Use Capability Map through modifications that
  respond to requirements of the Highlands Act;
- Maintain a cooperative planning process with the State Planning
  Commission to reconcile conflicting land use policies that municipalities
  may encounter when seeking to gain Plan Endorsement by the State
  Planning Commission or Plan Conformance by the Highlands Council;
- Coordinate with the State Planning Commission to ensure the sharing of all
  reports, petitions, recommendations and/or reviews generated for the State
  Plan Cross Acceptance and Plan Endorsement processes by Highlands
  municipalities and counties as well as those prepared as part of the
  Highlands RMP and Plan Conformance process with local Highlands
  governments;
- Streamline the State Plan and Highlands processes for municipalities and
  counties by providing for simultaneous agency reviews as well as joint
  meetings, whenever possible;
- Coordinate with the State Planning Commission to ensure consideration of
  any written comments provided by the Council concerning petitions before
  the Commission prior to any action approving, rejecting, or approving with
  conditions the petition for Plan Endorsement; and
- Coordinate with the Department of Community Affairs’ Office of Smart
  Growth to ensure the sharing of all relevant documents and data
  concerning the review and coordination of State infrastructure capital
  investment, community development, and financial assistance for local
  governments with lands in the Planning Area.

The Highlands Council will ensure consistent, on-going coordination with the
Regional, County, and Municipal Planning Agencies in support of Plan
Conformance and State agency coordination. The Council will work with these
agencies to allow for coordination and consistency in support of County and
municipal planning, project reviews and long term planning and funding
programs. The Regional and County Planning Agencies serve as a critical
interface between state, regional and local knowledge to ensure that RMP
policies and initiatives are coordinated throughout the Region. The data sharing
and management practices with Regional, County, and Municipal Planning
Agencies will continue to be refined and enhanced to ensure that timely updates
are achievable, quality assurance measures are in place and innovative
approaches may be realized.
Subpart d. Local Participation

Issue Overview

The local participation requirements in the Highlands Act call for the “maximum feasible local government and public input into the council’s operations, which shall include a framework for developing policies for the planning area in conjunction with those local government units in the planning area who choose to conform to the regional master plan.” (Section 11.a.(3)), including the establishment of opportunities for public input in the regional planning process, including coordination with county and local governments, stakeholders and the general public. Section 6 of the Highlands Act additional authorizes the Council:

j. To appoint advisory boards, commissions, councils, or panels to assist in its activities, including but not limited to a municipal advisory council consisting of mayors, municipal council members, or other representatives of municipalities located in the Highlands Region; and

k. To solicit and consider public input and comment on the council’s activities, the Regional Master Plan, and other issues and matters of importance in the Highlands Region by periodically holding public hearings or conferences and providing other opportunities for such input and comment by interested parties.

Local participation is a critical aspect of any planning process and has been a priority for the Highlands Council in the development of the RMP. This type of public participation is frequently utilized in land-use planning in order to involve citizens in the decision-making process and to enhance outcomes and establish a better sense of stewardship. Moreover, citizen participation may add knowledge to the planning process regarding local conditions, needs, and concerns that might otherwise go unaddressed.

To be successful, specific public participation strategies should be tailored to the needs of the individual planning effort and the relevant stakeholder groups. The Highlands Council has used a multi-faceted approach to involve stakeholders and interest groups in the development of the RMP. The Council will continue to encourage and enhance local participation in the implementation and refinement of the RMP, which in turn will enhance and maintain the natural, cultural and economic resources of the Highlands Region for years to come.

RMP Policies and Objectives Addressed

Policy 10A1. To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State and federal agencies.

Policy 10A2. To ensure sufficient local participation in the development of the RMP and on-going work of the Highlands Council.

Objective 10A2a. Engage stakeholder groups and individuals in public participation opportunities that provide meaningful input in the Highland Council planning process.

Policy 10A3. To ensure maximum RMP Conformance by municipalities and counties to achieve the highest level of protection for all important natural systems and resources of the Highlands.

Objective 10A3a. Provide benefits and incentives to municipalities and counties that conform to the RMP.

Program Summary

The Local Participation Component provides for a variety of approaches to meet requirements of the Highlands Act. Various outreach and communication efforts have taken place since the creation of the Highlands Act. Since its
inception, the Highlands Council has coordinated outreach programs and events for a variety of audiences. The overall efforts can be categorized into three separate programs: the Partnership, the Technical Advisory Committees (TACs), and the Network. The approaches that the Highlands Council uses to deliver information to the public and addresses constituent matters include: regular public meetings, public presentations, and the provision of individual outreach and constituent services. The Highlands Council website will continue to serve as a communication tool and reduce the need for physical production, distribution or packaging of Highlands Council documents.

The Highlands Council has utilized a variety of outreach approaches in order to provide details regarding the RMP, disseminate technical information, address individual comments and concerns, and meet the constituents of the Highlands Region. The Council operates in a transparent environment and will continue to promote and maximize public participation and stakeholder involvement.

The existing outreach components will continue to be utilized to encourage local participation. Additional strategies will include the development of training and educational programs on various subjects, resources and technical support on specific issues, and assistance in coordinating with other government entities in promoting regional goals.

To promote the understanding and support for the various RMP policies and objectives at the local level, and in support of Plan Conformance, the Highlands Council shall take actions that include the following:

**Resource Protection**

- Develop or utilize existing educational programs on water conservation measures to reduce consumptive and depletive uses of water supplies;
- Develop or utilize existing training and educational programs on methods for using water capacity thresholds in land use decision making;
- Provide educational and technical training programs to promote understanding of the importance of and consistent standards for the protection, restoration and enhancement of Prime Ground Water Recharge Areas;
- Provide educational and technical training program on Prime Ground Water Recharge Area protection measures through the use of municipal planning, zoning and other regulatory authority;
- Provide training and educational programs on ground and surface water quality protection and restoration methods;
- Develop a training and educational program on concepts, approaches and methods for wellhead protection;
- Develop training and educational programs on septic system design and maintenance and the protection of water quality;
- Review information with counties and municipalities regarding areas of ground water quality impairment known to exist, or that are suspected (e.g., lake communities with failing septic systems, public community water systems) and how best to protect or restore these resources;
- Develop educational and technical training programs to promote consistent standards for the protection, restoration and acquisition of important waters and riparian areas of the Highlands Region;
- Develop educational and technical training programs on resource protection standards, restoration and mitigation practices, and Low Impact Development Best Management Practices to minimize impacts from land
• Develop educational and technical training programs for innovative/alternative development and redevelopment initiatives in support of the RMP’s policies for development, infill development and redevelopment;
• Support stakeholder understanding of balancing development and redevelopment with resource protection and restoration, urban parks and green spaces, housing, employment, transit opportunities and other smart growth principles;

Land Preservation
• Educate the public on the economic, cultural and resource value of preserved open space in their communities;
• Assist municipalities and counties in gathering open space information in order to update and track existing data; and
• Develop educational and technical assistance on funding opportunities for land preservation, restoration and enhancement, and stewardship activities within the Highlands Region.

Agricultural Sustainability
• Develop educational and technical training programs to promote a viable and environmentally sustainable agricultural and horticultural industry in their communities and in the Highlands Region;
• Educate the public on the economic, cultural and resource value of maintaining a viable and environmentally sustainable agricultural and horticultural industry in the Highlands; and
• Promote, establish and use an Agriculture Advisory Committees as a resource to meet the goals of the RMP.

Historic, Cultural and Scenic Resources
• Provide educational and technical assistance to municipal and county officials regarding methods to identify and preserve the historic, cultural and scenic resources of their communities; and
• Provide assistance to counties and municipalities interested in developing a heritage tourism component of their historic preservation and recreation planning efforts.

Future Land Use
• Develop educational and technical training programs for innovative/alternative development and redevelopment initiatives in support of the RMP’s policies for development, infill development and redevelopment;
• Support stakeholder understanding of balancing development and redevelopment with resource protection and restoration, urban parks and green spaces, housing, employment, transit opportunities and other smart growth principles;
• Support economic improvement of the Highlands Region through development and redevelopment initiatives that balance housing, employment and quality of life;
• Provide programs and materials to educate stakeholders regarding the vast array of affordable housing options;
• Provide educational programs regarding residential green building features and rebates available for utilizing energy efficient construction elements for new development and home renovations; and
• Provide educational opportunities for Highlands Region stakeholders to learn about innovative design concepts and elements related to natural resource protection, smart growth principles, green building practices and other measures to enhance quality of life in the Highlands.

Water Resources and Utilities
• Develop educational programs on water conservation, low impact development, recycling and re-use measures and methods to reduce demand of existing water supplies;
• Develop training and educational programs for municipal utilities and public works departments to identify the adequacy or limitations of infrastructure for existing and future demands;
• Develop educational programs on water conservation, recycling and re-use measures and methods to control infiltration and inflow to maximize available wastewater treatment capacity; and
• Develop training and educational program for municipal and county planning boards and environmental commissioners on methods for using the RMP to revise and develop Wastewater Management Plans and in support of wastewater system maintenance.

Transportation System
• Provide resources, technical support, education and outreach in order to implement the transportation, transit and related air quality protection policies.

Recreation and Tourism
• Assist with tourism inventories to identify both public and private tourist attractions, such as historic, cultural, scenic and recreation sites, as well as facilities to support tourism, such as bed and breakfast inns, restaurants, bicycle rentals and provisioners; and
• Assist municipalities to work cooperatively with counties and neighboring towns to approach tourism from a regional perspective.

Land Owner Fairness
• Develop a public outreach and education agenda for the Highlands TDR Program, and information on Highlands Exemptions and Waivers;
• Establish a process for designating voluntary receiving zones within the Highlands Region and the seven Highlands counties, which process shall allow for significant public input; and
• Develop and implement a Voluntary TDR Receiving Zone Feasibility Grant Program to encourage and support interested municipalities in their petition to the Highlands Council for approval of TDR Receiving Zones.

Regional Economic Sustainability
• Provide a summary of the Cash Flow Timetable to the public on a periodic
Partnering Municipalities

• Assist municipalities in maximizing the efficiency of land development practices and opportunities for economic development and redevelopment in support of a sustainable regional economy.

Conformance and Implementation

• Assist municipalities, counties and stakeholders in understanding the nature and extent of Plan Conformance and Project Reviews requirements.

Partnership Program

The Partnership is a consortium of government representatives of the 88 municipalities and seven counties of the Highlands Region. It was formed to provide a forum for disseminating information on the RMP and implementation process, as well as to create a direct line of communication between the Highlands Council and its constituent governments to address any questions that may arise.

This program was created to make certain that local and county representatives and officials continue to have an active role in shaping their future. Representatives of the constituent towns and counties provided information on local issues and visions that related to elements of the RMP. Subjects of importance were identified and prioritized based on feedback from local and regional officials, including environmental protection, open space and land preservation, agriculture and forestry, economic development, tax ratables, affordable housing, infrastructure capacity, transfer of development rights, developing model ordinances, and potential legal issues and challenges. Partnership meetings also took place with Highlands municipalities on an individual basis. Workshops, luncheons and other meetings were also convened with municipal representatives.

The Council adopted data-sharing agreements with all of the seven Highlands Counties in order to facilitate the production of the RMP. These agreements allow the Council to collect and share data with counties, such as parcel data, which will be helpful to sister agencies and the individual municipalities. These agreements facilitate contact between the Council and the seven Counties and assists the Council and staff in creating a sound, data-rich plan. The data sharing agreements between will provide updated information and resources on a continual basis. The information generated from this process maintains an investment of benefit to the participating entities as well as the Council.

The Council will conduct constituent forums in support of the RMP and stakeholder understanding. In addition, education and training sessions covering a variety of topics including natural resources, housing, economic development, variances and exemptions for fair land stewardship, and innovative technologies, within the Highlands Region.

Technical Advisory Committees

The Technical Advisory Committees (TACs), consisting of technical experts and practitioners from a variety of relevant fields, including but not limited to planning, science, engineering, agriculture, transportation, real estate appraisal, and business, were convened to serve as resources to the Council and Highlands Council staff on specific subject matters. This outreach program was convened by the Highlands Council in order to gain a range of expertise in areas related to the development of the RMP.

The 18 committees focused on subject matters that the Highlands Act mandated the Council to address as part of the RMP. Topics included water
resources; land use planning; ecosystem management; land preservation; green construction; sustainable agriculture and forestry; eco-tourism; recreation; housing; community investment; regional development; brownfields; redevelopment; transportation; cultural, historic, and scenic resources; utility capacity; and transfer of development rights.

The TACs, acting in the capacity of "volunteer consultants" have had meetings where individual issues to be dealt with in the plan were discussed amongst the experts and Highlands staff where information pertaining to the scientific and technical basis for sections of the RMP was exchanged and expert opinions offered on a course of action for each topic. A two-day workshop forum (or charrette) was held by the Highlands Council. The objective of the TAC Charrette was for Highlands Council staff and the participants to discuss and record a spectrum of approaches and strategies for addressing the goals of the RMP.

The Highlands Council plans to continue outreach with the TACs, particularly in the development of the TDR Program and economic development and redevelopment initiatives. This process will allow the Highlands Council to gain different perspectives and will keep the TACs informed of the Highlands Council’s program approaches. In some cases, multiple TACs will be combined to improve effectiveness and efficiency of the process.

**The Network**

The Network was created in order to open the door to stakeholders, including the general public, to share information about progress on the RMP, gain local insight and comments on significant issues, address individual questions of concern, host special stakeholder events, conduct public availability sessions and provide web access.

To address their concerns, the Council has produced programs to inform citizens and business interests about the process surrounding the RMP and accept comments on any issues they may offer. The Council has participated in constituent meetings, received phone calls and responded to inquiries. The Highlands Council has also made numerous presentations to municipalities, interest groups and at conferences. Several times throughout the planning process, the Council proactively reached out to the Network in order to provide notice of the availability of new and updated information in the form of draft RMP data releases.

Public Availability or Open House sessions held at the Highlands Office will continue to be scheduled and serve as a means to invite the public to ask questions about the RMP in an informal setting. The dates for these meetings will be available periodically at the Council’s website. Repositories containing hardcopies of the RMP will be located at several local libraries and community colleges in order for the public to have enhanced public access to the documents for review. Currently, a repository for all hardcopy data released exists at the Highlands Council Headquarters in Chester, New Jersey and is available for public viewing upon request.

The Highlands Council will continue outreach to the general public in order to inform the conformance process and implementation of the plan as well as to benefit stakeholders. Information will be presented on the ecological, economic, cultural and recreational value of maintaining healthy forests in the Highlands and of preserved open space in their communities. The Council seeks to achieve an understanding of balanced development and redevelopment with resource protection and restoration, urban parks and green spaces,
<table>
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<tr>
<th>Regular Public Meetings and Presentations</th>
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<td>The Highlands Council meets on a regularly scheduled basis at the Highlands Council Office in Chester, New Jersey. The numerous committees of the Council meet on an as-needed basis. These meeting forums are open to the public and include opportunities for public comment. In fulfillment of the requirements set by the Act, the Council held hearings regarding the draft PMP to receive public comments, and also held Council meetings in each of the seven constituent counties to inform the public about the goals of the Highlands Council. The Council provides information to the public about a variety of topics related to the development of the RMP at regularly scheduled meetings of constituent municipalities and counties. Local concerns and comments are received at these meetings and will continue to be addressed on an individual basis.</td>
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<th>Individual Outreach and Constituent Services</th>
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<td>Outreach is also addressed by the Highlands Council on a case-by-case basis. Beyond the larger meeting forum, citizens may have general concerns, questions, or request a follow-up after Highlands Council meetings by either visiting, writing to, or calling the Council offices. Depending on the subject matter and availability of information, Highlands Council staff will offer an immediate response or acknowledge the request and provide a reply within a reasonable timeframe. Additionally, the Council is bound by the Open Public Records Act (OPRA) and have an established procedure for responding to any requests submitted via this procedure. Additionally, the Council is available to meet with representatives of constituent municipalities and counties regarding aspects of the Highlands Act, the RMP and Plan Conformance process, and any local concerns or information that these entities have to offer. There have been numerous meetings organized and/or attended by staff to interact and engage with property owners to provide specific information related to individual properties. Meeting handouts and other written documents have been prepared and distributed in an effort to educate the general public about the Highlands Region, the role of the Council, the RMP and NJDEP's Highlands Rules. This important outreach component will continue to be a service rendered to individuals and organizations by Highlands Council Staff.</td>
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<th>Special Stakeholder Events</th>
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<td>Open meetings and special events geared toward addressing individual topics and/or stakeholder groups are another avenue for disseminating information to groups of constituents. This format was employed to inform Highlands landowners, particularly those in the Preservation Area, about the Highlands Act in order for them to make educated decisions regarding the future of their land. The &quot;Landowner Forum&quot; convened early in the process, advised this special stakeholder group about landowner rights and options. More than 100 participants attended the forum which consisted of presentations by Highlands Council staff, the State Agriculture Development Committee (SADC), and Green Acres. The public was afforded the opportunity to meet with the various state, county and non-profit land preservation entities, including Morris Land Conservancy, Trust for Public Land, New Jersey Conservation Foundation, Association of New Jersey Environmental Commissions, Passaic River Coalition, Hunterdon Land Trust Alliance, as well as representatives from Morris, Passaic, and Warren Counties to discuss preservation opportunities.</td>
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Another special stakeholder event was a bus tour for Highlands Council members and staff to view a variety of farms in the region with members of the New Jersey Farm Bureau and Highlands farmers to learn about local farmers needs.

Educational programs and technical training which will be developed as part of the plan implementation will be presented at the Highlands Office. The dates for these meetings are available at the Council’s website.

The Highlands Council has maintained a website since shortly after adoption of the Highlands Act ([http://www.highlands.state.nj.us/](http://www.highlands.state.nj.us/)). The site contains document releases, maps, frequently asked questions, legal requirements of the Act, and other information for stakeholder groups including the Council’s calendar, agendas, meeting minutes, public comments and press releases. Summary reports from the initial TAC meetings as well as the TAC Charrette Workbooks are available at the Highlands Council website. This is an important method of public education as many of the public releases and relevant documents provided by the Council have been posted to the website, as will be the release of the RMP.

The stakeholder page provides specific information for many groups including homeowners, landowners, municipalities, counties, grassroots organizations, and farmers. A “hot topics” section contains timely issues and recent public information. There are also links to other State websites that deal with Highlands issues or that might affect the stakeholders in the Highlands Region. An important tool for stakeholders is the interactive mapping application which allows the public to determine if their property - by street address or specific block and lot designation - is in the Highlands Preservation or Planning areas. The property search tool will be enhanced with Land Use Capability Zone Map and Highlands resource data as they become available.

The RMP includes requirements and recommendations for municipal and county implementation through the Plan Conformance process, many of which require specialized knowledge regarding technical, scientific and planning fields. The Highlands Council will prepare and provide technical training and education for elected and appointed officials and their staff to ensure that Plan Conformance activities are implemented with the greatest possible understanding of the issues, effectiveness and efficiency. In most cases, these training and education opportunities will be provided at the regional level, and may be provided in cooperation with professional and municipal organizations.

**Part 2. Highlands Project Review**

**Subpart a. Project Review Process**

**Issue Overview**

The Highlands Council is legislatively charged with reviewing proposed projects throughout the Highlands Region, including both the Preservation Area and the Planning Area, for consistency with the goals, requirements, and provisions of the Highlands Regional Master Plan. The Project Review responsibilities identified in the Highlands Act and specified through State agency coordination include the following:

1. Development applications submitted to Local Government Units
2. Call-up of Local Government Unit approvals
3. Capital, State and Local Government Unit projects
4. Highlands Preservation Area Approvals (HPAA)
5. Approvals, authorizations or permits issued by NJDEP

Development Applications. Section 6.r of the Highlands Act identifies the specific responsibility to “comment upon any application for development before a local government unit, on the adoption of any master plan, development regulation, or other regulation by a local government unit, or on the enforcement by a local government unit of any development regulation or other regulation, which power shall be in addition to any other review, oversight, or intervention powers of the council prescribed by this act.”

Call-up of Local Government Unit approvals. Section 17.a.(1) of the Act states that “[s]ubsequent to adoption of the regional master plan, the council may review, within 15 days after any final local government unit approval, rejection, or approval with conditions thereof, any application for development in the preservation area” with the ability to override the local decision if inconsistent with the RMP. Within the Planning Area, the Council shall include as a condition of Plan Conformance procedures for the Highland Council call-up of Local Government Unit approvals.

Capital, State and Local Unit Projects. Section 16 of the Act states that “the council may provide comments and recommendations on any capital or other project proposed to be undertaken by any State entity or local government unit in the Highlands Region.”

Highlands Preservation Area Approvals (HPAA). The Highlands Act, in Sections 9 and 11, authorize the Highlands Council to “identify areas in which redevelopment shall be encouraged” in the Preservation Area and “any areas identified for possible redevelopment pursuant to this subsection shall be either a brownfield site designated by the Department of Environmental Protection or a site at which at least 70% of the area thereof is covered with impervious surface.” These Redevelopment Site Approvals would be reviewed and approved by the Highlands Council and then review for consistency with NJDEP’s waiver provisions in accordance with N.J.A.C. 7:38-6.

Approvals, authorizations or permits issued by NJDEP. The NJDEP’s Highlands rules (N.J.A.C. 7:38) also empowers the Council to review and comment on proposed projects in the Region. The rules state “for the planning area, when consistent with its statutory and regulatory authority, the Department shall not issue any approval, authorization or permit that the Department determines, in consultation with the Highlands Council, to be incompatible with the resource protection goals in the RMP…”(N.J.A.C. 7:38-1.1(h)). N.J.A.C. 7:38-1.1(i) states “In its review of permits or approvals under this chapter in the preservation area, the Department shall apply the standards of this chapter and those in the RMP, to be incorporated by reference in (l) below, when adopted by the Highlands Council. Where the Department, in consultation with the Highlands Council, determines there is an inconsistency in the standards, the Department shall apply the Regional Master Plan.” As per N.J.A.C. 7:38-1.1(j), the NJDEP shall give great consideration and weight to the RMP, to be incorporated by reference in making permit decisions that: 1) provide relief from strict compliance with the standards of the applicable permit programs, such as making a determination of public benefit or hardship waiver from certain NJDEP permits; or 2) provide relief through the issuance of a HPAA with waiver.
Specifically, the rules at N.J.A.C. 7:38-1.1(k) require that NJDEP only approve a Water Quality Management Plan (WQMP) amendment after receiving from the Highlands Council a determination of consistency with the RMP, for both the Preservation and Planning Areas.

Highlands Act exemption determinations in the Planning Area. For all Highlands Project Reviews in the Planning Area, the Highlands Council will review and make determinations of those projects that are determined to be exempt from the Highlands Act under Section 30. The Council shall use the applications procedures and substantive standards for Highlands Applicability Determinations in NJDEP’ Highlands Rules at N.J.A.C. 7:38-1.1 et seq. which are incorporated herein by reference.

It is imperative to develop a comprehensive, coordinated system of project reviews to ensure that there is consistency and sufficient detail in review approach among different types of projects. Implementation of a detailed and comprehensive process will result in maximum efficiency, cost-effectiveness, and transparency and will serve as a mechanism to coordinate state agency reviews on projects requiring multiple permits.

RMP Policies and Objectives Addressed
This program relates to most components of the RMP and their associated policies and objectives regarding technical standards and criteria for development and redevelopment project reviews in support of Highlands Act requirements.

Program Summary
The purpose of this program is to establish administrative and procedural standards to facilitate accurate, comprehensive and timely reviews of applications submitted to the Highlands Council. The procedures will be designed to provide accurate and complete information as a basis for Council determinations. The program will establish a process that is clear, transparent and understandable to, applicants, the Council, state agencies and the public. The program has three principal components:

- Administrative Review procedures to ensure that applications are processed and tracked and that the review process is efficient and transparent
- Technical Review procedures to ensure that there is an accurate and consistent technical review
- Council Review procedures leading to a comprehensive Council determination

Administrative Procedures
The Highlands Council will establish standard operating procedures regarding all project applications received:

The Council will implement its filing system by project category (e.g., WQMP, Redevelopment, etc.), county and municipality. Following are the general elements that will comprise the administrative procedures process:

- a system regarding the logging, tracking and filing of all applications
- a process of notifying the public regarding all pending reviews
- procedures regarding pre-application meetings
- a process for determining if an application is administratively complete
- appropriate permit fee schedules
- review timeframes/schedules
- procedures for public access to, and review of, applications
- procedures for determining whether a public hearing or staff administrative hearing is required
### Technical Review Procedures

The Highlands Council will establish detailed technical review procedures for all project categories. Following are the general elements that will comprise the technical review procedures:

- all applications must be submitted with sufficient information to allow a complete project review, including a GIS or AutoCAD site layout. Submittal of written and graphical information in electronic format will be encouraged.
- all project reviews will utilize the standard RMP resource GIS layers
- all project reviews will utilize the standardized project review checklist; the checklist for a particular project category will be tailored as necessary to accommodate specific requirements (e.g., the 70% impervious surface determination for proposed redevelopment areas)
- all WQMP reviews will be based upon information provided by the NJDEP or applicant on behalf of NJDEP, in addition to the Council’s RMP resource GIS layers
- based upon the GIS-layer review and the completion of the project review checklist, staff reviews will be summarized in a draft staff recommendation report
- applicants will be provided with the draft staff recommendation report and given an opportunity to provide comments

### Council Review Determinations

Highlands Council staff will present a final staff report with recommendations to the Highlands Council to approve, deny, or approve with conditions. Approval of a proposed project is dependant on the demonstration that it is substantially consistent with the goals, requirements, and provisions of the Highlands Act and the RMP. Any The Highlands Council shall provide an opportunity for public comment and then approve, approve with conditions, or deny the application. Where a project is approved with conditions, the conditions shall be specified. Where a project is denied, the specific justification for denial shall be specified. The Highlands Council’s final determination shall include written findings of fact and conclusions based thereon.

### Subpart b. Project Review Standards

#### Issue Overview

The purpose of this Project Review Standards Program is to summarize the technical standards for project reviews of applications submitted to or reviewed by the Council to ensure consistency with the goals, policies, objectives, program requirements, and other provisions of the RMP.

#### Program Summary

This program establishes the substantive standards for Highlands Council reviews of all applications submitted to or reviewed by the Council to ensure consistency with the RMP. The Highlands Council shall review projects against the RMP goals, policies, objectives and standards. All project reviews will use the standardized Highlands Council project review checklist and the Highlands RMP resource GIS layers as follows:

- Agricultural Resources
- Carbonate Rock
- Critical Habitat
- Forests
Highlands Open Waters and Riparian Areas  
Historic, Cultural, Archaeological and Scenic Resources  
Prime Ground Water Recharge Areas  
Steep Slopes  
Wellhead Protection Areas

In addition to the resource-based standards, this program also includes smart growth standards for requiring or encouraging development patterns in the Region that are consistent with existing infrastructure and land uses that discourage scattered piecemeal development patterns.

The smart growth standards for project review will use a series of GIS data layers to support the evaluation. The data will be complemented by local and regional planning documents and land use policies to further inform the review. Where appropriate, standards for review have been developed to clarify the review process. The RMP smart growth data layers that support this analysis will be project specific based on the nature of the project and may include but are not limited to the following:

- Land Use Capability Map Series, including:
  - Zone Map
  - Water Availability by HUC14 Subwatershed
  - Public Water Supply System Capacity and Existing Area Served
  - Public Wastewater System Capacity and Existing Area Served
  - Septic System Yield by HUC14 Subwatershed, Zone and Municipality

- Contaminated Sites data layer

- Developed Lands data layer

- Highlands Composite and Municipal Zoning

- Impervious Surface data layer

- Local Conditions Indicator data layers

- State Development and Redevelopment Plan Designated Centers

- Transportation and Transit data layer

Project Review: Standard for Approval

The RMP and the Highlands Act include a number of project review policies and objectives that are mandatory for all or for certain classes of projects. They also encourage consideration of other concepts for improved land development. Each project reviewed by the Highlands Council will be judged against all mandatory requirements of the RMP and the Highlands Act. Each project reviewed by the Highlands Council will also be evaluated regarding non-mandatory components of the RMP and the Highlands Act to determine if the proposed project could be designed in a manner that better fulfills RMP goals and policies. The Council may approve a project that does not fully reflect the non-mandatory components if it meets the mandatory requirements, but may include with its approval any recommendations for consideration by local government units, the State or other decision-making bodies for their consideration.

Forest Review Standards

The Highlands Act exempts forestry activities conducted in accordance with a Forest Management Plan approved by the State Forester. For non-exempt land uses, the RMP protects forests through standards applicable to the Region’s most important forested areas (i.e., within the Forest Resource Area) and highest quality forests, and NJDEP standards apply to forests in the
Preservation Area.

NJDEP review standards for proposed major Highlands developments in upland forested areas in the Preservation Area are in the Highlands Preservation Act Rules at N.J.A.C. 7:38-3.9. Applicants are required to identify all forest areas in existence on a lot as of August 10, 2004 as well as those forest areas that have been subsequently developed. Activities are prohibited that would result in disturbance to an upland forest located on a slope greater than 10 percent, except for certain linear development. An applicant must demonstrate that there is no alternative that would have less adverse impact on the upland forest or could be located outside the upland forest. Specific limits are applied to the protection of forest quality and extent, and also tree health where they may be affected by development activities.

Through the RMP, human development in the Forest Resource Area in the Preservation Area is limited in order to protect and enhance forest resources, critical habitat and the quantity and quality of water resources. Permissible uses within the Forest Resource Area are limited to maintenance of pre-existing uses and restoration of impaired forest areas, where relief from strict adherence to these standards shall be permitted only upon approval of a forest mitigation plan. The deforestation of lands within the Forest Resource Area of the Preservation Area for human development is prohibited except where exempted by the Highlands Act. The expansion of public infrastructure into the Forest Resource Area is prohibited except as shown to be necessary for, and is approved by, the Highlands Council to support clustered development that cannot feasibly be located outside the Forest Resource Area or the forested portion of the Forest Resource Area, to serve a designated Highlands Redevelopment Area, to address a documented threat to public health and safety where no alternative is feasible, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of forest resources. Forest clear-cutting within the Forest Resource Area is prohibited except in accordance with a Forest Management Plan approved by the State Forester.

Within the Protection and Conservation Zones in the Planning Area, human development of forests is limited to very low impact residential development. Permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds is limited to maintenance of pre-existing uses; minimal removal of woody vegetation from forested lands is permitted, subject to an approved Forest Management Plan or development that utilizes low impact development best management practices and an approved forest mitigation plan. Redevelopment of previously developed areas (and other compatible uses) is permitted in forest lands within Low Integrity Forest Subwatersheds that minimize losses to forested lands and that are conducted in accordance with an approved forest mitigation plan or low impact development best management practices. Deforestation in the Forest Resource Area and forested lands within High Integrity Forest Subwatersheds within the Existing Community Zone is limited to the maximum extent practicable. The clearing of trees in conjunction with human development is limited to circumstances where the clearing will not diminish the integrity of forest resources.

Applications for local development review and Highlands Project Review require identification of any forest area on and adjacent to a site in accordance with the Highlands Council’s Alternate Method for Identifying Upland Forest Areas in the Highlands Region. Forestry activities within a Forest Resource Area or forested
lands within a High Integrity Forest Subwatershed are allowed only when in compliance with an approved Forest Management Plan. Clear-cutting of forest lands is prohibited (except pursuant to an approved Forest Management Plan) to the extent necessary to promote native forest regeneration, early successional wildlife habitat, or to remove invasive species.

All applications for approval through local development review and Highlands Project Review are required to include the identification and mapping of Highlands Open Waters. Preservation Area buffers for Highlands Open Waters shall comply with the Highlands Preservation Area rules at N.J.A.C. 7:38.

The RMP provides a protection buffer of 300 feet from the edge of the all Highlands Open Water features. In the Protection and Conservation Zones, adjustments and revisions to the buffer requirements are prohibited, except as necessary to protect public health and safety, or to provide for minimum practical use in the absence of any alternative. In the Existing Community Zone, modifications to the protection buffer to 150 feet or 75 feet can be made under limited circumstances, but regardless of the buffer size new land uses or the alteration of existing land uses are restricted such that there would be no detrimental impacts to the water quality and habitat value of a Highlands Open Water or a Riparian Area. Where land disturbance is otherwise permitted in the Existing Community Zone, low impact development best management practices are required to minimize any potential for habitat or water quality impairment. The Highlands Council may determine to require, on a case-by-case basis, an expansion of the 300-foot buffer to protect the habitat of a water or wetlands-dependant rare, threatened or endangered species, to the minimum expansion necessary to achieve protection of that species.

All applications for approval through local development review and Highlands Project Review are required include the identification and mapping of Highlands Riparian Areas, including those identified by the Highlands Council and by site-specific analysis. Within High and Moderate Integrity Riparian Areas, beyond the Highlands Open Water buffer, alterations to existing natural vegetation or increases in impervious area will be limited to the minimum extent feasible. In such cases, low impact development best management practices will be required.

The Highlands Act mandates for the Preservation Area “a prohibition on development, except linear development for infrastructure, utilities, and the right-of-way thereof, provided that no other feasible alternative, as determined by the department, exists for the linear development, on steep slopes in the preservation area with a grade of 20% or greater, and standards for development on slopes in the preservation area exhibiting a grade between 10 and 20%” (N.J.S.A. 13:20-32j). NJDEP standards at N.J.A.C. 7:38-3.8 address development on slopes with a grade greater than 10 percent but less than 20 percent in the Preservation Area as follows:

1. If the steep slope is a forest, linear development shall be permitted if there is no feasible alternative for the linear development outside the steep slope;
2. If the steep slope is not a forest and the appropriate Soil Survey for the on-site soil series and percent slope states that the soil capability class of the soil is III or higher, or IIe or IIs, linear development shall be permitted provided that there is no feasible alternative for the linear development outside the steep slope; or
3. If the steep slope is not address by (1) or (2), major Highlands development
shall be permitted provided the proposed development meets all other standards, and the applicant demonstrates that there is no other location, design and/or configuration for the proposed development that would reduce or eliminate the disturbance to steep slopes and still fulfill the basic purpose of the proposed development.

The RMP includes protection of steep slopes in each LUCM Zone. Both local development review and Highlands Project Review will examine any Steep Slope Protection Areas located on the parcel proposed for development, forested lands, areas which are highly susceptible to erosion, depth to bedrock, and Soil Capability Classes. Disturbance of Severely Constrained Slopes (undeveloped areas with slope exceeding 20%, or slopes >10% within a Riparian Area) and Moderately Severe Constrained Slopes (forested slopes 15%-20% not within a Riparian Area) is prohibited. For other Steep Slopes, the use of low impact development best development practices are required for any land disturbance or human development.

### Critical Habitat Review Standards

As per the Highlands Preservation Act Rules at N.J.A.C. 7:38-3.11, the NJDEP shall not issue an approval unless it determines that the proposed activity will not jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of habitat for, any rare, threatened or endangered species of animal or plant. Further the NJDEP shall not issue an approval unless the proposed activity would result in the minimum practicable degradation to a unique or irreplaceable land type (which includes vernal pools) on the site or within the immediate area of the proposed project.

The RMP prohibits the direct impact of new human development or expansion or increased intensity of existing development within Critical Wildlife Habitats, Significant Natural Areas, or within 1,000 feet of Vernal Pools. The indirect impact of any activity that is off-site, adjacent to, or within critical habitat that would result in the destruction or adverse modification of habitat for any rare, threatened, or endangered species of animal or plant is prohibited. Any disturbance to a critical habitat feature must include conservation and management measures that mitigate all adverse modification and provide for no net loss of habitat value.

Modifications to the delineation of Critical Wildlife Habitat, Significant Natural Area and Vernal Pool protection buffers of 1,000 feet may be approved by the Highlands Council under limited circumstances, as discussed in the Critical Habitat Conservation and Management Program.

### Carbonate Rock Review Standards

The RMP implements a Carbonate Rock (Karst) Topography Program to address the potential problems that are common to karst areas, such as sinkholes. Projects will be reviewed to determine if the sites are in, or drain to the Carbonate Rock Area. Project sites located within the Carbonate Rock Area must ensure that public health and safety is protected through site design and layout controls to avoid or mitigate hazards from karst topography, and ground water quality is protected from contamination that may penetrate the ground surface through karst features.

### Prime Ground Water Recharge Review Standards

The RMP prohibits land uses within any Prime Ground Water Recharge Area that may reduce recharge volumes, or other uses that may impair water quality within or draining to a Prime Ground Water Recharge Area. Any development activity in a Prime Ground Water Recharge Area must demonstrate that an equivalent of 125% of pre-existing recharge volumes of the site will be provided for within the same subwatershed, or by other means as determined by the
Highlands Final Draft Regional Master Plan

Further, the RMP prohibits the creation of impervious surfaces and other surfaces that significantly impede recharge within a Prime Ground Water Recharge Area in the Protection Zone. In the Conservation Zone, land uses will be discouraged and restricted that may reduce recharge volumes or that may degrade water quality in areas within or draining to a Prime Ground Water Recharge Area. In both the Protection and Conservation Zones, modifications will be allowed to Prime Ground Water Recharge Area protection requirements only upon demonstration that any relief from protection requirements will not impair or reduce ground water recharge quality or volumes.

Agricultural Review Standards

The Highlands Act provides special status to agricultural development activities in the Preservation Area, requiring the development of farm conservation and resource system management plans when a 3 or 9 percent increase impervious cover is proposed, respectively. The Act also establishes goals for the protection and preservation of agriculture in the Region (see Agriculture Management & Sustainability Program for more information).

Non-agricultural land development within an Agricultural Resource Area must not conflict with the protection and enhancement of agricultural production, protection of prime farmland soils, or other natural resource management and protection requirements. All non-agricultural development that is proposed in an Agricultural Resource Area must comply with open space design requirements to avoid conflicts between such development and agricultural activities and protect farmland and sensitive environmental resources. Clustering for residential development is mandatory in an Agricultural Resource Area such that at least 80% of the parcel proposed for residential development is preserved as farmland or natural resource area. In addition, the agricultural use on the remaining parcel is limited to the 3 percent and 9 percent requirements for farm conservation and resource system management plans.

The development of additional water and wastewater infrastructure is prohibited in an Agricultural Resource Area within the Protection Zone of the Planning Area and within the Preservation Area, except where such additional infrastructure is necessary to address an existing public health concern, mandatory clustering or a redevelopment waiver, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council. The development of additional water and wastewater infrastructure is prohibited in an Agricultural Resource Area in the Conservation Zone of the Planning Area, except where such additional infrastructure is necessary to address the needs of an existing public health concern or clustering as approved by the Highlands Council.

Refer to the Sustainable Agriculture and Cluster Development Programs for additional project standards and criteria.

Historic, Archaeological and Scenic Resources Review Standards

Projects will be reviewed for a presence or absence determination regarding historic, archaeological and scenic resources. The project shall include the identification of any historic, archaeological or scenic resources in the Highlands Region which are listed on the Highlands Historic and Cultural Resource Inventory or the Highlands Scenic Resource Inventory that may be affected by the proposed development. The project shall address the requirements of N.J.A.C. 7:38-3.10 for Historic or Archeological areas and...
N.J.A.C. 7:38-3.12 for Existing Public Scenic Attributes.

If these identified scenic, historic or archaeological resources are affected the project shall comply with minimum standards for the preservation of the affected resources including but not limited to the following:

- To use the Secretary of the Interior’s Standards for the Treatment of Historic Properties as the standard for municipal historic and cultural preservation review and include, at a minimum, the preservation and re-use of historic structures;
- To ensure that human development does not adversely affect the character or value of resources which are listed on the Highlands Scenic Resources Inventory; and
- Require that development proposals identify measures considered and used to protect the integrity of historic, archaeological and scenic resources and the integrity of their surroundings, and where appropriate, to address potential reuse and rehabilitation of historic structures.

Refer to the Historic Preservation Program and Scenic Resource Program for additional project standards and criteria.

Smart Growth Review Standards

Smart Growth is a strategic approach that utilizes comprehensive planning to guide design, development and revitalization of communities. Smart growth principles support sound land use decisions and serve as an advocate for informing future land management decisions that consider environmental protection needs in the context of efficient land development.

In order to accommodate local and regional economic development of the Highlands Region, the RMP encourages growth to occur in locations that have limited environmental constraints, represent existing developed areas that have access to infrastructure, apply compact development concepts, and are in accordance with community character. The Highlands Act refers to the prohibition and limitation of construction and development within the Preservation Area and the revocation of water and sewer service areas that are not constructed, in support of this preservation goal. The Highlands Act recognizes the State Development and Redevelopment Plan goal to encourage development patterns that are consistent with existing infrastructure and compatible with historic and efficient land use development patterns, and discourages scattered piecemeal development patterns. Therefore infrastructure investments in the Highlands serve to support public health and safety, environmental resource protection and efficient land development in the context of local and regional conditions.

The Highlands Council will review proposed projects regarding the extent to which each addresses the following Smart Growth principles drawn from the Goals, Policies and Objectives, some of which are further detailed in this document or additional RMP program documents.

- Project is designed in compliance with Land Use Capability Zone Map and other LUCM Series components regarding development yield, water availability, public water supply and wastewater system capacity and general Zone standards (see Land Use Capability Analysis Program).
- Project is in compliance with Lake Community Area standards for shoreline management, scenic features and water quality (see Lake Management Area Program).
- Project reflects developed land features, and the design and layout of the
• Project complements surrounding land uses and community character and includes consideration of energy efficient features in site layouts and all structures.
• Project maximizes land use efficiency while protecting environmental resources and community character.
• Project has evaluated the non-developable portions of a parcel proposed for development for the purpose of satisfying on-site passive open space requirements and stewardship needs.
• Project complements local socio-economic needs and conditions for employment, quality of life and housing.
• Project supports the use of the Highlands Development Credits (see Transfer of Development Rights Program).
• Project complies with existing municipal zoning where more stringent than the LUCM Zone standards and RMP policies and objectives.
• Project demonstrates that public water and wastewater capacity is available where proposed for use, and that all required water use efficiency measures are included in the development design (see Water Use Efficiency Program).
• Project reflects septic system yield limitations at the subwatershed, Zone and municipal level where septic systems are to be used.
• Project demonstrates that sufficient water availability exists for project needs, including HUC14 subwatershed, municipal and other limitations (see Highlands Restoration: Water Deficits Program).
• Project complies with wellhead protection standards for all Tiers (see discussion below).
• Project meets required impervious surface standards as applicable for the Preservation Area in accordance with N.J.A.C. 7:38-3.5 Impervious Surfaces, Agricultural Resource Area, Conservation Zone, storm water rules and low impact development standards.
• Project has addressed the minimum requirements for water conservation measures in site layout and structures, including but not limited to water efficient landscaping (including use of native and drought-tolerant plant species), rain collection systems, use of grey water, and water-efficient landscape irrigation (see Water Use Efficiency Program).
• Project has addressed the minimum requirements for site-specific hydrologic studies including the identification of the velocity, volume and pattern of water flow into, through, and off of the parcel proposed for development.
• Project supports transportation system preservation and promotes transit, multi-modal connections and pedestrian safety, and where appropriate reduces vehicle miles traveled (see Air Quality Program and Transportation Safety and Mobility Program).
• The project has addressed the resource protection standards to provide for the protection of mobile and stationary air quality concerns as appropriate (see Air Quality Program).
• Project supports local land use initiatives such as designated redevelopment area, urban enterprise zone or foreign trade zone or is within a Main Street Program, Special or Business Improvement District or Transit Village (see Redevelopment Program).
• Project supports RMP policies for redevelopment and incorporates Highlands resource protection, utilities, transportation and local community
character into redevelopment planning (see Redevelopment Program).

- Project supports local land use conditions such as developed areas of a Designated Center that is anticipated for growth due to local planning and infrastructure investments.

Refer to the *Smart Growth Manual, Transportation Program, Housing and Community Facilities Program, Redevelopment Program, Transfer of Development Rights Program, Sustainable Regional Economy Program, Air Quality Program* and the *Land Use Capability Analysis Program* for additional information regarding the smart growth project review standards and criteria.

### Lake Management Areas

This program component seeks to protect, restore and enhance the water quality of Highlands lakes and to protect the unique character of Highlands lake communities. It facilitates land use and water resource planning on the basis of lake management tiers:

- A **Shoreline Protection Tier** comprised of all land within 300 feet of the shoreline of a Highlands Lake
- A **Water Quality Management Tier** comprised of land within 1,000 feet of the shoreline of a Highlands Lake
- A **Scenic Resources Tier** consisting of an area measured 300 to 1,000 feet from the shoreline, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances

Projects must comply with all mandatory provisions of the Lake Management Area for each tier in which the project would be located. Project review standards for each lake tier are listed in the *Lake Management Program*.

### Wellhead Protection

The purpose of this program component is to establish resource protection measures to protect and enhance ground water and water supply resources within Wellhead Protection Areas consistent with the source water assessments for each water supply source and the RMP policies. New land uses are prohibited that have a significant potential to result in the discharge of pathogens (including but not limited to septic systems and engineered stormwater infiltration from surfaces with significant potential for contact with pathogenic contaminants) to ground water or to the land surface within a designated Tier 1 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality. New land uses are prohibited that have a significant potential to result in the discharge of persistent organic chemicals (including but not limited to discharges of industrial or other non-sanitary wastewater effluent) to ground water or to the land surface within a designated Tier 2 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality. New land uses in a Tier 3 Wellhead Protection Area must ensure that pollutant discharges to ground water are either regulated pursuant to a NJPDES permit or meet the LUCM Zone requirement for septic system yields without clustering. Where a new land use in Tier 3 includes the storage or use of persistent organic chemicals and other toxic substances but does not propose a discharge of such substances, the land use must include measures to minimize the potential for discharge, and to respond to any discharge that does occur.

### Public Water Supply Systems

The purpose of this program component is to ensure that the service areas of Highlands Public Community Water Systems shall be limited such that the maximum monthly demand shall not exceed or contribute to an exceedance of
the water availability of its source waters (see Land Use Capability Analysis Program and Highlands Restoration: Water Deficits Program). New, expanded or extended public water systems in the Preservation Area and in the Protection and Conservation Zone of the Planning Area are prohibited unless they are shown to be necessary for and are approved by the Highlands Council to address a demonstrated threat to public health and safety that cannot reasonably be addressed through on-site alternatives, for Highlands Redevelopment Areas, or for cluster development that is otherwise consistent with the Resource Protection and Smart Growth standards and policies of the RMP. All development in areas which are not served by public water systems shall be at a density which can be safely supported by on-site domestic wells.

New residential development served by public community water systems shall have a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, recreational or other preserved open space), and be at a minimum intensity of a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational or other preserved space) to ensure cost-effective utility service.

Wastewater Management Infrastructure

In the Existing Community Zone, the expansion or creation of wastewater collection systems beyond Existing Areas Served is allowed as a standard approach as long as the sewer service area does not harm protected environmental resources.

New, expanded or extended wastewater collection or treatment systems outside of Existing Areas Served in the Preservation Area and in the Protection and Conservation Zone of the Planning Area are prohibited unless they are shown to be necessary for and are approved by the Highlands Council to address a demonstrated threat to public health and safety that cannot reasonably be addressed through on-site alternatives, for Highlands Redevelopment Areas, or for cluster development that is otherwise consistent with the Resource Protection and Smart Growth standards and policies of the RMP. In each case, extension of existing wastewater systems shall only occur if the area to be served is adjacent to an Existing Area Served. Otherwise, community-based on-site treatment facilities shall be created that only serve the proposed project, shall not include infrastructure to support future growth, and shall have legal guarantees that prohibit the provision of services to secondary growth.

The construction of sewer lines within Tier 1 of Well Head Protection Areas that may result in seepage of untreated sewage into ground water supplies is prohibited. Expansion of a public wastewater collection and treatment systems within or to serve critical natural resource areas in the Preservation Area and in Highlands Open Water buffer areas, Riparian Areas, forested portions of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, Steep Slopes, and Critical Habitat is prohibited unless to address a demonstrated threat to public health and safety that cannot reasonably be addressed through on-site alternatives.

The RMP requires that new residential development served by public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, and recreational or other preserved space). Further, it is required that that new non-residential development served by public wastewater collection and treatment systems be at a minimum intensity...
of a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational or other preserved space) to ensure cost-effective utility service.

Septic System Densities

Development proposals in conforming municipalities shall comply with municipal requirements for septic system yield where septic systems are proposed (see Land Use Capability Analysis Program). For development proposals in non-conforming municipalities, the project shall demonstrate compliance with the appropriate nitrate target for the LUCM Zone in which the project occurs, using the project site area as the land basis, and drought ground water recharge for the HUC14 subwatershed as dilution:

1. Preservation Area: NJDEP requirements at N.J.A.C. 7:38
2. Planning Area, Existing Community Zone: 2 mg/L
3. Planning Area, Conservation Zone: 1.87 mg/L
4. Planning Area, Protection Zone: 0.72 mg/L

New residential development using septic systems where lot-size averaging, clustering or open space subdivision design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the LUCM Zone, provided that the density for the developed portion of the site is based on a nitrate dilution target not to exceed 10 mg/L. All new residential development using septic systems, and especially clustered development with septic systems, shall be designed in a manner that minimizes the risk of well contamination due to the flow of septic system plumes within or between developed lots, addressing general ground water flow patterns, major fracture systems and other appropriate geological, geophysical and hydrogeological issues, and well construction.

Highlands Redevelopment Area Reviews

The Highlands Council may designate one or more properties or portions of properties as a Highlands Redevelopment Area providing that the site satisfies the requirements of the Highlands Act and RMP. Proposed Highlands Redevelopment Areas will be reviewed to ensure that for the Preservation Area the site is a either a Redevelopment Site with at least 70% percent of the area covered with impervious surface as that term is defined in N.J.A.C. 7:38-1.4 or is a Designated Highlands Brownfield Sites pursuant to N.J.A.C. 7:38-6.6. For the Planning Area in the Protection and Conservation Zones the Council will review proposed Highlands Redevelopment Areas to ensure that the site is a Redevelopment, Brownfield or Grayfield site. For the Existing Community Zone in the Planning Area, the Council will allow for redevelopment of any previously developed lands. Infill development may be included within Highlands Redevelopment Areas to the extent that the full area meets the applicable designation requirements.

In general the Highlands Redevelopment Area must comply with the following:

1. Will not impair any Highlands Resource Area located on or adjacent to the Highlands Redevelopment Area.
2. Is consistent with the standards of the RMP and will advance the intent and purpose of the Highlands Act.
3. Has sufficient water supply and wastewater treatment capacity to serve the proposed Highlands Redevelopment Area.

There are two documents that may be referred to for further detail regarding redevelopment area reviews – Procedures for Highlands Redevelopment Site Approval and the Redevelopment Program – both of which provide further details regarding...
the specifics of redevelopment review protocols and will be used by the Highlands Council when conducting redevelopment area project reviews.

The NJDEP's Highlands rules at N.J.A.C. 7:38-1.1(k) require that NJDEP only approve a Water Quality Management Plan (WQMP) amendment after receiving from the Highlands Council a determination of consistency with the RMP, for both the Preservation and Planning Areas.

Delineation of Wastewater Service Areas represents a critical component of WQMPs. Designation of appropriate wastewater service areas promotes sound development and redevelopment and protection of important Highlands Region resources. The RMP designates areas currently served by “in the ground” public wastewater collection or treatment systems as Existing Areas Served. Any area proposed for sewer service that is not an Existing Area Served would be a Future Sewer Service Area. Other areas are designated for service by septic systems at densities prescribed by the RMP.

The Highlands Council shall consider an area appropriate for inclusion in a Proposed Sewer Service Area if the area is previously developed, not connected to public wastewater collection or treatment systems, and represents an area with a documented threat to public health and safety that cannot reasonably be addressed through on-site alternatives. The Highlands Council shall also consider Highlands Redevelopment Areas and the Existing Community Zone as appropriate for inclusion in a Future Sewer Service Area, subject to the environmental constraints above in this program. Finally, the Highlands Council shall also consider areas identified as appropriate for clustered development as Future Sewer Service Areas when the cluster development will have densities that prohibit the use of septic systems. In each case the proposed Future Sewer Service Area must be consistent with the Resource Protection and Smart Growth standards and policies of the RMP. The Highlands Council review will include the following specific elements:

**Water Availability.** A WQMP amendment must include demonstration of sufficient water supply to accommodate current and future development. Wherever a new or expanded sewer service area is proposed that meets resource protection standards, the applicant must identify water sources with sufficient capacity to supply current and expanded demands for the proposed sewer service areas. However, this requirement does not mean that sewer service areas must be served by public community water systems.

The RMP establishes sustainable thresholds for development based on Net Water Availability which limit future consumptive and depletive water uses. Consumptive water use reduces water returned to the system by evaporation and other losses. Depletive uses can include, but are not limited to, an export of water out of the subwatershed, such as through a transfer of water via a wastewater collection system. The Net Water Availability Analysis provides information to determine if sufficient water supply is available to serve water supply needs associated with current and future demand (see Land Use Capability Analysis Program).

To determine if adequate water supply exists for a proposed sewer service area, the WQMP amendment must provide information about water supply needs within public water supply service areas and areas served by domestic wells.

The appropriate demand assignments should be compared with the net water availability calculated to each HUC14 subwatershed. Where the source HUC14
subwatershed is in, or anticipated to be in, a deficit of net water availability, then the applicant must address the following conservation or management practices:

1. Identify appropriate conservation methods or other means to reduce water demand or use.
2. Reduce the sewer service area creating the excess demand;
3. Reduce the future demand for consumptive and depletive water use; or
4. Submit a Water Management Plan that addresses the water deficit (see the Highlands Restoration: Water Deficits Program for more information).

**Wastewater Capacity.** Where proposed sewer service areas are identified that meet the water availability criterion, an applicant must demonstrate that wastewater treatment facilities have or will have sufficient capacity to accommodate projected flows of existing and proposed development. Where proposed sewer service areas encompass more than one municipality and a municipal contract or allocation exists, the potential wastewater generated in each municipality must not exceed capacity allocated to that municipality. Otherwise capacity shall be assessed for the full service area of the facility.

The LUCM and RMP standards should be referenced to determine total existing and projected wastewater flows. The RMP prohibits new, expanded or extended sewer service areas beyond Existing Areas Served in the Protection Zone and Conservation Zone except for limited circumstances as discussed in Wastewater Management Infrastructure above. The RMP allows proposed sewer service areas in the Existing Community Zone provided resource protection standards are met.

The Highlands Council requires that wastewater generation potential of sewer service areas match or be less than the allowable capacity of the associated treatment facility. Additionally, new or expanded wastewater infrastructure can be approved only if the proposed discharge will not impair water quality. The RMP specifically requires demonstration that the proposed discharge will not directly or indirectly be in violation of an adopted TMDL.

**Water Quality.** The patterns and types of land use within the existing areas served and proposed sewer service areas have the potential to affect water quality from the discharges of point source and nonpoint sources. To ensure the protection, restoration and enhancement of water quality within the Highlands, proposed sewer service areas shall demonstrate that they will not directly or indirectly degrade the water quality of Highlands waters.

Water quality requirements are addressed by four types of NJDEP documents: 1) Surface Water Quality Standards at N.J.A.C 7:9B; 2) Ground Water Quality Standards at N.J.A.C. 7:9C; 3) TMDLs and associated implementation plans adopted under N.J.A.C. 7:15; and 4) identified water body impairments from the NJDEP Integrated List adopted under N.J.A.C. 7:15. Each WQMP amendment must include information on a receiving water body's designated use(s) or classification and how they will be protected; and provide associated water quality criteria and demonstration of how those criteria will be met, including information on all wasteload allocations that are relevant.

1. **Nonpoint Source and Stormwater Pollution.** The WMP must demonstrate that, utilizing best management practices and low impact development approaches, potential degradation of uses or water quality will be eliminated or otherwise meet NJDEP requirements.
2. **Point Sources and Antidegradation.** Where the projected wastewater
generated from a proposed sewer service area requires an increase in the permitted capacity of the wastewater treatment facility or a new wastewater facility, the WQMP amendment must demonstrate that any new or expanded treatment facility will meet all relevant nondegradation or antidegradation requirements for the water quality in the receiving surface water or ground water resource.

**Wellhead Protection Areas.** The WQMP amendment must demonstrate compliance with the RMP requirements for wellhead protection.

**Nitrate Dilution.** The RMP establishes nitrate concentrations that must be met to ensure that development densities served by on-site septic systems will not impair water quality. Developments based on septic systems that do not comply with the septic system density requirements of the RMP are prohibited.

See *Procedures for Highlands Review of Water Quality Management Plan Amendments* for further details on the process used by the Highlands Council when conducting these project reviews.

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**Part 3. Improvement of the Regional Master Plan**

**Subpart a. Water Resources and Ecosystem Science Agenda**

**Issue Overview**

The Data and Analysis chapter of the RMP includes resource assessments for a multitude of natural resources, particularly water resources, based on a significant research effort by the Highlands Council. Much of that information represents one-of-a-kind data products using innovative methods and techniques. For example, water utility service areas maps developed by the Highlands Council remain a unique product in the State.

Implementing the Goals, Policies and Objectives of the RMP will require programs to guide the ongoing research agenda after its adoption. A major focus will be continued refinement, updating and research into new methods to improve the Council’s understanding of the Highlands Region’s resources.

**RMP Policies And Objectives Addressed**

Policy 1D1. To establish and maintain an inventory of Highlands Open Waters and their integrity.

Policy 1D2. To establish and maintain an inventory of Highlands Riparian Areas and their integrity.

Policy 1D3. To periodically review and update, as necessary, the Watershed Resource Value and Riparian Area Integrity Values, including more stringent protection buffer requirements whenever HUC14 subwatersheds of lower value are restored to a higher value.

Policy 1E1. To establish and maintain an inventory of steep slope areas with slopes equal to or greater than 10% that constitute the Steep Slope Protection Area.

Policy 2C1. To improve estimates of Net Water Availability over time, including testing, development and adoption of ecologically-based assessment techniques to evaluate the high and low flow needs of streams necessary to maintain the health of aquatic ecosystems, and the relationship between ground water recharge, ecological flow needs, consumptive water uses and estimates of water availability for both ground and surface water resources.

Policy 2C2. To evaluate potable water supply reservoir safe yield and passing
flow requirements and examine the effects of upstream consumptive and depletive water uses on safe yields and of passing flows on Highlands Open Waters and recommend regulatory changes to NJDEP as appropriate.

Policy 2C3. To develop a more refined Hydrologic Unit Map using Light Detection and Ranging (LiDAR) technology and high resolution digital elevation modeling to support more detailed geographic estimates of water availability.

Policy 2C4. To develop more refined estimates of the effects on Net Water Availability regarding the exportation and importation of water and wastewater.

Policy 2J9. To ensure continued refinement and development of the Regional Master Plan.

Objective 2J9a. Implement a coordinated program with NJDEP to track ground water and surface water withdrawals and water allocations within the Highlands Region to maintain current estimates of net utility capacity and to fill critical missing data gaps.

Policy 2M1. To monitor and assess nitrate-related impacts to water resources within the Highlands Region.

Policy 2M2. To develop appropriate and innovative resource management programs to protect, restore, and enhance subwatersheds where existing ground water quality is impaired.

Objective 2M2a. Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems providing the systems meet the minimum standards of N.J.A.C 7:9A.

**Program Summary**

The following components represent items for inclusion into a long-term science agenda for the Highlands Council, particularly as they related to water supply, water quality and watershed integrity. They represent a variety of research topics.

Some of the research efforts began during drafting of the RMP. Therefore, many of these components have already been started. Others will require a long-term effort and their initial development will begin after RMP adoption and in some cases after Plan Conformance.

**Ground Water Capacity Estimates And Ground Water Availability Thresholds**

The estimates of ground water capacity are critical in the RMP’s water resource assessments. They serve as the measure of natural sustainability of the Highlands waters and quantify stream base flows that are critical for aquatic ecological integrity and water quality.

The Highlands Council investigated several methods to calculate ground water capacity. However, no accepted method provided a direct relationship between aquatic ecosystem integrity and stream flows. Therefore, the Highlands Council focused on the severity and duration of base flows as a reasonable surrogate for ecosystem and water supply impacts. Ultimately, the Highlands Council utilized the Low Flow Margin of Safety method, which is also being used by the New Jersey Department of Environmental Protection for the upcoming NJ Water Supply Plan.

Several other methods, which were not initially selected because of the limited schedule and lack of regional data available, may yet show promise for
additional research in estimating the availability of water resources for human and ecological needs. Additional research may be warranted for the following methods: New Jersey Hydrologic Assessment Tool (Eco-flow goals), Range of Variability, R2Cross, or Wetted Perimeter method.

Another critical determinant in the net water availability analysis is determining the amount of ground water capacity that is available for human uses without adversely affecting aquatic ecological integrity. This parameter, known as ground water availability, is computed as a fraction (or threshold) of ground water capacity. The aforementioned models can aid in improving estimates of appropriate thresholds.

As a long-term objective, the Highlands Council will develop a program for improving estimates of ground water capacity and availability. This effort will consist of development, testing and adoption of ecologically-based models or techniques that characterize varying flow regimes in streams necessary to maintain the health of aquatic ecosystems.

The Highlands Council has already contracted with the USGS for additional support under this program. After RMP adoption in 2008, the Highlands Council and USGS will develop a specific scope of work for additional research under these water resource programs. Development and implementation of this program is anticipated to be an on-going, multi-year task.

**Protection Of Downstream Water Source/ Safe Yields**

NJDEP is currently updating its guidance for evaluating the safe yield and passing flow requirements for surface water systems with reservoirs. NJDEP is also revaluating those safe yield values to reflect operational and infrastructure modifications in those systems while incorporating the new methodology.

The Highlands Council will coordinate with NJDEP as appropriate as surface water supply systems examine the effects of upstream consumptive and depletive water uses on safe yields and of passing flows under the new procedure. The Highlands Council will recommend regulatory changes as part of the ongoing process. Of specific interest will be methods to better ensure that passing flows from reservoirs are sufficient to maintain ecological integrity.

**Highlands Open Waters and Riparian Areas Inventory**

The Highlands Council will develop methods for continued development and refinement of Highlands Open Waters and Riparian Areas inventory with an emphasis on identification of headwater streams and headwater seeps and springs.

**Expand Ambient Biological Monitoring Network In Highlands Region**

The Ambient Biological Monitoring Network (AMNET) program, initiated by NJDEP in 1992, established sampling stations in every subwatershed of the state to evaluate the health of instream benthic macroinvertebrate communities. There are approximately 200 AMNET stations within the Highlands Region.

The Highlands Council (in cooperation with Rutgers-Center for Remote Sensing and Spatial Analysis and the New Jersey Water Supply Authority) performed statistical analyses to assess correlations between key watershed characteristics and AMNET scores for the Region’s streams. The analysis did not yield sufficiently strong statistical correlations for assigning scores to non-assessed watersheds.

The intent of this program component is to coordinate with NJDEP to expand and establish a consistent AMNET to include additional stations in the Highlands Region. The Highlands Council will use the data as input into the continued development of a Regional Stream Integrity model to further refine...
The Highlands Council has contracted for the use of Light Detection and Ranging (LiDAR) technology to generate high-resolution digital elevation modeling. This will enable the Council to develop more accurate topographic information that is necessary to refine HUC14 mapping. In addition, the LiDAR data could be used to map drainage areas at a smaller scale (HUC17) than the current subwatershed, if its utility warrants that effort.

The Highlands Council also will establish and maintain an inventory of steep slope areas in the Highlands Region showing slopes that are a minimum of 5,000 square feet and: a) 10% or greater, but less than 15%, b) 15% or greater, but less than 20%, and c) 20% and greater. The Highlands Council will apply (LiDAR) to develop a 2-foot interval contour topographic map as a basis for refining the identification of Steep Slope Protection Areas.

Development of this program is already underway. The Highlands Council already has gathered the LiDAR data and intends to begin using it in early 2008. Refinement of HUC14 boundaries and mapping of HUC17s could begin by summer 2008.

The Highlands Council will determine where water quality improvements are necessary or beneficial for the improvement of water quality, develop watershed-based plans to achieve such improvements, develop mechanisms, and identify funding sources to implement these plans. As part of this effort, the Council will determine in coordination with NJDEP and USGS the extent to which additional water quality monitoring stations are needed in the Highlands Region to better assess water quality in key watersheds. For more detail on this program, see the Water Quality Restoration Program.

The RMP calls for refined estimates on Net Water Availability. Of particular importance in the analysis regards the transfer of water and wastewater between subwatersheds (depletive uses). The import and export of these utilities have a significant effect on the estimate of consumptive and depletive water demands.

Understanding consumptive and depletive uses is a complex task, but is crucial to estimating Net Water Availability. Using its unique compilation of water and sewer service areas, and their associated demand/discharge data, the Highlands Council now has the ability to track water from its withdrawal point to its ultimate discharge. The tracking model will be conducted largely using GIS techniques, as have been utilized in the past the New Jersey Geological Survey (NJGS) and the New Jersey Water Supply Authority (NJWSA). Based on an estimated 9-12 month project schedule, water tracking could be incorporated into the Net Water Availability analysis, perhaps by early 2009.

The Highlands Council utilized several forms of water and wastewater data from NJDEP and utility sources. These data sets include permitted water allocation withdrawals, reported wastewater discharges, and public community water system demand data. The data were incorporated into both the Utility

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### Digital Terrain Modeling And Determination of Hydrologic Units and Steep Slopes

Many of the resource assessments in the RMP, including all hydrologic and many ecological assessments, are performed using the HUC14 subwatershed as the standard areal unit. HUC14s are the smallest standardized hydrologic drainage unit commonly used in water resource analysis. Delineation of HUC14 boundaries is only as accurate as the topographic mapping, typically developed using aerial photographs.

### Water Quality

The Highlands Council will determine where water quality improvements are necessary or beneficial for the improvement of water quality, develop watershed-based plans to achieve such improvements, develop mechanisms, and identify funding sources to implement these plans. As part of this effort, the Council will determine in coordination with NJDEP and USGS the extent to which additional water quality monitoring stations are needed in the Highlands Region to better assess water quality in key watersheds. For more detail on this program, see the Water Quality Restoration Program.

### Water and Wastewater Tracking

The RMP calls for refined estimates on Net Water Availability. Of particular importance in the analysis regards the transfer of water and wastewater between subwatersheds (depletive uses). The import and export of these utilities have a significant effect on the estimate of consumptive and depletive water demands.

Understanding consumptive and depletive uses is a complex task, but is crucial to estimating Net Water Availability. Using its unique compilation of water and sewer service areas, and their associated demand/discharge data, the Highlands Council now has the ability to track water from its withdrawal point to its ultimate discharge. The tracking model will be conducted largely using GIS techniques, as have been utilized in the past the New Jersey Geological Survey (NJGS) and the New Jersey Water Supply Authority (NJWSA). Based on an estimated 9-12 month project schedule, water tracking could be incorporated into the Net Water Availability analysis, perhaps by early 2009.

### Water and Wastewater Use Data

The Highlands Council utilized several forms of water and wastewater data from NJDEP and utility sources. These data sets include permitted water allocation withdrawals, reported wastewater discharges, and public community water system demand data. The data were incorporated into both the Utility
Highlands Final Draft Regional Master Plan

Capacity and Net Water Availability analyses. The information is typically collected and reported on an annual basis. However, the data must often be checked and validated before their use in regional capacity analyses. The most recent complete data set used by the Highlands Council was from the year 2003. Having the most up-to-date data is important for both capacity assessments.

The Council will implement an ongoing effort to update water and wastewater data as they become available on an annual basis. The data will be incorporated into resource assessments to provide the most accurate capacity analyses possible. The Highland Council has already contracted with the USGS for continued technical support and intends to develop a defined scope of work for this program component. This program is anticipated to be an ongoing program.

Regional Stream Integrity Model

A Regional Stream Integrity Model will aid in the evaluation of the protection, restoration and enhancement of streams within the Highlands Region. Regional integrity scores will be assigned to streams within a specific sub-watershed to measure the physical, biological and chemical integrity of a stream to serve as an aid in resource protection decision making.

The Model will function to classify Highlands Region streams, which will aid in qualifying regional protection measures and restoration targets for water quality, aquatic community structure, and in-stream and riparian habitat enhancement. The data used to classify streams will also aid in evaluating existing State Water Quality Standards for stream classification, including identifying streams appropriate for petitioning NJDEP to upgrade streams to C1 status.

Ground Water Quality Management

Nitrate has been selected as a surrogate for non-point source impacts to ground water quality, particularly for monitoring potential water quality degradation from on-site wastewater treatment systems, which can pose threats to human health and the environment.

The Highlands Council proposes to improve existing monitoring networks and use additional data sources, in coordination with the NJGS and USGS, for monitoring and evaluating both natural conditions and anthropogenic factors in ground water quality. Particular emphasis will be placed on contaminants of interest, such as nitrates associated with septic systems in high density residential areas and agricultural areas, to more accurately characterize existing water quality conditions, land use impacts, and the efficacy of land planning and management practices. If possible, sampling should include potable wells in near proximity to different types of land uses so that a more representative characterization of potential health risks and their relation to land use can be achieved. Use of the Private Well Testing Act data, in a manner that fully complies with privacy provisions of that Act, will be explored.

The Highlands Council has already contracted with the USGS for additional support under this program. After RMP adoption in 2008, the Highlands Council, NJGS, and USGS can develop a specific scope of work for defining an improved ambient ground water quality monitoring network.

Models for Establishing Septic Density

Existing USGS logistical regression models for estimating septic densities based on median nitrate concentrations can be further tested and refined with additional data collected and modeling. Additionally, logistical regression models could be developed to assess the impacts of specific land use types, such as agricultural, residential, and undeveloped areas, and different hydrogeologic
setting, such as limestone and unconsolidated.

These models could not only better quantify septic densities for areas characteristic of varying land use types and settings, but increase an understanding of various land use factors and other conditions that influence water quality, which can lead to improve land planning and wastewater management practices.

Development of this program is anticipated to be performed in conjunction with NJGS and USGS during design of the improved ambient ground water quality modeling network.

**Forest Sustainability**

The Highlands Council will implement a long term forest sustainability program that will entail proactive management of deer populations and non-native invasive species and reductions in the rate of forest fragmentation. Criteria and indicators will be developed to measure the sustainability of the forest resource. Data will be collected to assess long term sustainability. Valuation methods will be developed for carbon sequestration, invasive species control, and management activities tied to forest health improvement and the intrinsic societal values of forests including water quality protection. See the Forest Resource Management and Sustainability Program.

**Subpart b. Regional Master Plan Monitoring**

**Issue Overview**

The RMP seeks to protect the natural and cultural resources of the Highlands Region, while maintaining a sustainable economy. The Highlands Council recognizes that the RMP will be implemented in an ever changing Highlands Region and despite a changing landscape, the RMP will need to continue to provide solutions to current issues.

Monitoring and research are vital to understanding the impact of the RMP and of conditions that affect the RMP. Once data are collected and tracked over a period of time, conclusions can be drawn regarding the effectiveness of the RMP. Indicators will be used by the Highlands Council to evaluate regional conditions, identify new or emerging issues, and develop future priorities. Based on the findings of the monitoring, updates and amendments to RMP policies and programs may need to be made. The implementation of a monitoring program is necessary to ensure the vision of long-term sustainability in the Highlands Region.

**RMP Policies and Objectives Addressed**

Policy 10A1. To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State and federal agencies.

Policy 10A3. To ensure maximum RMP Conformance by municipalities and counties to achieve the highest level of protection for all important natural systems and resources of the Highlands.

Objective 10A3a. Provide benefits and incentives to municipalities and counties that Conform to the RMP.

Policy 10A4. To monitor and track the long-term success of the Regional Master Plan.

Objective 10A4a. Prepare a Highlands RMP Monitoring Review Report triennially to ensure that the RMP is meeting its goals.

**Program Summary**

The RMP Monitoring Program and associated Monitoring Review Report provide the framework for evaluating progress in achieving the goals of the
RMP Monitoring

The Highlands Final Draft Regional Master Plan through implementation of policies and programs. The approach is similar to that of a municipal master plan re-examination report. The implementation of a monitoring program will ensure that the RMP remain effective and current.

The RMP Monitoring Program will provide a framework for tracking the long-term success of the RMP. The review will consist of on-going monitoring of indicators and a periodic monitoring report which documents regional indicators and milestones. The monitoring initiative will evaluate progress in achieving the goals set forth in the RMP as they pertain to conforming municipalities and counties, as well as to non-conforming municipalities and counties, to the degree that information is available.

Monitoring activities by the Highlands Council will guide potential amendments to the RMP. Indicators will help to identify where RMP policy is most effective, and where amendments to policy or programs may be useful. If an aspect of the RMP is found to be unattainable, ineffective, or missing, this assessment will result in an appropriate course of action.

Indicators relating to environmental, social, and economic health will be used to document changes in the Highlands Region. Indicators will be chosen based upon the usefulness of information they communicate and data availability throughout the Region over time. Indicators may be either quantitative or qualitative depending on the parameter to be measured. If at any time an indicator is found to be inadequate, or another measurement is found to better measure a parameter of the RMP, the indicator may be revised. The values may reflect a Highlands baseline data standard or a governmental standard. Monitoring will also identify gaps in available data and develop data-gathering mechanisms to fill such gaps or include recommendations for additional or alternative data.

The monitoring of indicators will be an on-going process, although the Monitoring Review Report will be prepared periodically, as described below.

RMP Monitoring Review Report

The RMP Monitoring Review Report will be used to communicate with state, federal, county, and local planning partners and the general public the successes of the RMP, as well as the remaining challenges to the Region. Initially, the RMP Monitoring Review Report will be a baseline assessment of the Highlands Region, based upon the RMP monitoring indicators. The initial assessment will inform the development of “Highlands Milestones.” Milestones will be chosen for each indicator and are intended to reflect progress toward long-term RMP goals. For example, an RMP indicator that would be measured yearly may be “acres of critical protection priorities that are preserved as open space”. The milestone would be an “increase in preserved critical protection priorities from the previous year.” Another associated milestone would be an “increase in conservation easements from the previous year.” An emphasis will be placed on substantive indicators that directly measure “real world” change or protection. Where milestones are needed for RMP implementation, administrative or programmatic indicators may be used as well.

The Monitoring Review Report will track changes to the indicators and report on Highlands Milestones achieved and not achieved.

Examples of Highlands Milestones that may be used include:

- Increase in the acreage of new parks and preserved open space and farmland that preserve high priority lands;
• Increase in the number of redevelopment and brownfields properties that are redeveloped in conformance with RMP policies;
• Reduction or elimination of Water Deficits in HUC14 subwatersheds;
• Increase in the percentage of new development within areas served by public water and sewerage;
• Compliance of new development with RMP septic system densities, where public sewerage is not used;
• Increase in the number of zoning amendments and/or new/updated ordinances reflecting RMP policy;
• Increase in the percentage of new construction projects that include mixed use or green building approaches;
• Increase in the number of new/updated resource management plans or protection measures reflecting RMP policy;
• Increase in the number of opportunities for public participation in the Highlands planning process, including education and outreach programs; and
• Increase in the number of municipalities or portions of municipalities participating in Plan Conformance.

The monitoring of indicators is an on-going process, and the RMP Monitoring Review Report will be produced every three years, or additionally, if necessary. RMP Monitoring Review Reports will be used to inform the development of future iterations of the RMP.

### Part 4. Highlands Council Implementation Programs

#### Subpart a. Highlands Council

Implementation program priorities are presented in three categories:

1. **Immediate Priority** – as soon as possible after adoption of the RMP in order to support local government preparation of modified master plans and development regulations for conformance review to allow

2. **Intermediate Priority** – as soon as possible without delaying completion of Immediate Priority implementation actions

3. **On-going Priority** - as soon as possible without delaying completion of Immediate and Intermediate Priority implementation actions

#### Immediate Priority

1. **Grant Programs for Plan Conformance.** The RMP requires the Council to establish and administer grant programs in support of local government plan conformance activities which are a matter of immediate priority to encourage and support plan conformance.

2. **Minimum Requirements for RMP Substantive Programs.** The RMP requires the Council to prepare minimum substantive requirements for RMP programs, e.g. the minimum requirements for a Community Forestry Plan. The minimum requirements are of the highest priority in order to guide local government efforts with regard to plan conformance.

3. Technical Assistance, Model Ordinances and Guidance Manuals Related to the Jurisdiction of Local Government Master Plans and Development Regulations. The RMP programs provide for the preparation and distribution of various technical assistance documents, guidance manuals
and model ordinances which are within the jurisdiction of local government master plans and development regulations. These documents are anticipated to incorporate by reference existing resource materials from the literature and other agencies of government, supplemented with specific guidance for their use in the Highlands. Preparation of these documents is matter of the very high priority because these documents must be available for local governments during their preparation of amendments to local government master plans and development regulations.

4. **Highlands Development Credit Program.** The RMP anticipates that the Highlands Development Credit Program (“HDC”) will go into effect immediately upon approval. Implementation of the HDC program requires the creation of the Highlands Credit Bank, formal adoption of governing documents and rules of procedure and early capitalization of the Highlands Credit Bank. The Council should immediately and actively seek funding from the State of New Jersey to facilitate the operations of the Highlands Credit Bank.

5. **Highlands State and Federal Agency Coordination Committee.** The Council shall continue to work with the Highlands State and Federal Agency Coordination Committee to establish interagency teams to provide cooperation with regard to implementation of the RMP.

**Intermediate Priority**

1. **Coordination with State Agencies.** The RMP recognizes that the activities of state agencies directly affect implementation of the RMP. The RMP provides that the Council will actively seek to coordinate with state agencies with regard to matters which affect resources in the Highlands and to promote implementation of the RMP. Where appropriate, the RMP provides that the Council should seek the formation of interagency working groups or other forms of multi-agency action in support of implementation of the RMP.

2. **Educational Programs.** The RMP requires the Council to develop and implement educational programs for public officials, other stakeholders, interested persons and the general public with regard to a variety of subjects. Education is critical to the success of the RMP in terms of local government plan conformance and long term implementation of the RMP.

3. **Research Initiatives.** The RMP identifies a number of research initiatives which would enhance implementation of the RMP. The RMP requires the Council to develop work programs for such research to solicit funding for the research and encourages the Council to coordinate with other agencies of governments with regard to the conduct and funding of the research.

**On-going Priority**

1. **Funding for On-going Highlands Programs.** The success of the RMP will be defined, to some considerable degree, by the funding which is available for implementation, both short term and long term. The RMP contemplates that the Council will actively and aggressively pursue funding for implementation of Highlands programs from any and all potential sources of funding, including new state and federal legislation.

2. **Establishment of a Highlands Water User Fee.** The equitable distribution of the benefits and burdens of the implementation of the RMP requires that all beneficiaries, including water uses should share in the cost of implementation. The RMP identifies the establishment of a Highlands...
Water user fee which would be used for RMP implementation, is an equitable means for plan implementation and vital to the long term implementation of the RMP.

3. **Technical Assistance Documents and Guidance Manuals.** The RMP provides for the preparation of technical assistance documents and guidance manuals for resource management programs, like stream restoration (design guidelines for restoration of channel profiles, floor and sediment control, bank stabilization and restoration of aquatic habitat and ecological function) which involve programs in addition to local government development regulations. The RMP provides that the Council coordinate the preparation of technical assistance documents and guidance manuals with other agencies of government.

4. **Resource Planning and Management Initiatives.** The RMP calls for the Council to promote various long-term substantive resource planning and management programs, e.g. the development and implementation of Forest Stewardship Plans for all preserved lands within the Region or the restoration of open waters including streams and riparian areas in conjunction with development and redevelopment. The Council should develop these programs and over-time, promote their implementation by appropriate public and private agencies. In addition, the Council should actively seek funding from public and private sources for the development and implementation of long-term resource planning and management programs.

5. **Monitoring Programs.** The RMP provides for the establishment of a variety of monitoring programs in order to improve the quality of data available for resource planning and management decisions and to better understand Highlands resources. The RMP contemplates that many monitoring programs will be conducted in cooperation and coordination with other agencies of government at the local, regional, state and federal level.

6. **Award Programs.** The RMP provides for the establishment of award programs to recognize exemplary examples of RMP implementation programs.

**Subpart b. Local Governments**

The local governments within the Highlands Region are responsible for land and water resource planning and management at the local level and will be responsible for regulating the land and water resources within each community under the Highlands Regional Master Plan.

1. **Initiate Amendments to Local Government Master Plans and Development Regulations.** Local government initiation of amendments to local government master plans and development regulations which are required for a determination of that the local governments master plan and land development regulations are in conformance with the Highlands RMP.

2. **Submit Amended Local Government Master Plans and Development Regulations to Highlands Council For Plan Conformance Determination.** Local governments within the Preservation area shall submit amended local government master plans and development regulations to the Council for Plan Conformance review and determination.

**Subpart c. State Government**

Implementation of the RMP will require the active assistance and support of numerous state agencies including DEP, Department of Agriculture,
Department of Community Affairs, DOT and the Legislature of the State of New Jersey.

1. **Coordination with State Planning Commission.** The Council shall submit the RMP to the State Planning Commission and coordinate with the Commission to resolve any inconsistencies between the RMP and the State Development and Redevelopment Plan.

2. **Coordination with State Agencies with Regard to RMP Implementation.** The Council shall work with state agencies to coordinate implementation of the RMP.

3. **Highlands State and Federal Agency Coordination Committee.** State agencies shall continue to work with the Highlands State and Federal Agency Coordination Committee to establish interagency teams to provide cooperation with regard to implementation of the RMP.

4. **Funding of RMP Implementation Programs.** The RMP anticipates that RMP implementation will require significant funding under existing state programs as well as pursuant to new funding initiatives, e.g. a Highlands water use fee.

### Subpart d. Federal Government

Implementation of the RMP will be enhanced through coordination and cooperation with federal agencies and financial assistance and support through existing and new programs.

1. **Highlands State and Federal Agency Coordination Committee.** Federal agencies shall continue to work with the Highlands State and Federal Agency Coordination Committee to establish interagency teams to provide cooperation with regard to implementation of the RMP.

2. **Funding of RMP Implementation.** The RMP anticipates that RMP implementation will require significant funding under existing federal programs and, if possible, from new legislation. Grants-in-aid in support of implementation of the RMP, for example, would be consistent with historical federal funding of water resources bills.
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New Jersey Department of Transportation
New Jersey Department of the Treasury
New Jersey Economic Development Authority
New Jersey Environmental Infrastructure Trust
New Jersey Meadowlands Commission
New Jersey Pinelands Commission
New Jersey Redevelopment Authority
New Jersey State Agriculture Development Committee
New Jersey Transit
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- Eco-Tourism and Recreation
- Education
- Geographic Information Systems
- Green Construction
- Housing
- Land Preservation
- Land Use Planning
- Regional Development and Design
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- Sustainable Forestry
- Transfer of Development Rights
- Transportation
- Utility Capacity
- Water Resource Management

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New Jersey State Parks, Forests, Recreation Areas and Marinas. http://www.state.nj.us/dep/parksandforests/parks/parkindex.html


“Affordable housing” means housing with a sales price or rent within the financial means of a low- and moderate-income household as defined by the Council on Affordable Housing.

“Agricultural Impervious Cover” means agricultural or horticultural buildings, structures, or facilities with or without flooring, residential buildings, and paved areas, but shall not mean temporary coverings. (Section 3 of the Highlands Act, hereinafter “Section 3”)

“Agricultural or Horticultural Development” means construction for the purposes of supporting common farm site activities, including but not limited to: the production, harvesting, storage, grading, packaging, processing, and the wholesale and retail marketing of crops, plants, animals, and other related commodities and the use and application of techniques and methods of soil preparation and management, fertilization, weed, disease, and pest control, disposal of farm waste, irrigation, drainage and water management, and grazing. (Section 3)

“Agricultural or Horticultural Use” means the use of land for common farm site activities, including but not limited to: the production, harvesting, storage, grading, packaging, processing, and the wholesale and retail marketing of crops, plants, animals, and other related commodities and the use and application of techniques and methods of soil preparation and management, fertilization, weed, disease, and pest control, disposal of farm waste, irrigation, drainage and water management, and grazing. (Section 3)

“Agricultural Resource Area” means farming landscapes that includes areas with 250 acres or more of contiguous farmland; farms that include Important Farmland Soils; lands adjoining a farm that are in agricultural use; and concentrations of preserved farmland.

“Agri-tourism” means business opportunities for and related to farm operations other than the sale of food products and other agricultural goods, usually involving the public spending money at farms and in farm areas by traveling to agricultural or horticultural areas for enjoyment or to participate in farm-related activities.

“Air toxins” means air pollutants that have toxic effects known or suspected to cause serious health problems.

“Application for Development” means the application form and all accompanying documents required for approval of a subdivision plat, site plan, planned development, conditional use, zoning variance, or direction of the issuance of a permit pursuant to the "Municipal Land Use Law," P.L.1975, c. 291 (C.40:55D-1 et seq.) or R.S.40:27-1 et seq., for any use, development, or construction. (Section 3)

“Base Credit Number” means, for purposes of allocating Highlands Development Credits to a Sending Zone parcel participating in the Highlands Development Credit Program, the residential units or residential unit equivalents that could have been developed on the parcel of land on August 9, 2004, taking into consideration all municipal development regulations and applicable State and federal laws and regulations.

“Best management practice” means policies, practices, procedures or structures implemented to mitigate the adverse environmental effects resulting from land uses.

“Brownfield” means any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of contaminants.
“Build Out Model” means an evaluation of land development scenarios, generally for a municipality or larger area, based on a set of assumptions and variables.

“Capital Improvement” means any facility for the provision of public services with a life expectancy of three or more years, owned and operated by or on behalf of the State or a political subdivision thereof. (Section 3)

“Carbonate Rock Area” means all areas of the Highlands that are underlain by carbonate rocks based upon New Jersey Geological Survey (NJGS) geologic mapping data.

“Clearcutting” means a forestry practice in which all or most trees in an area are removed to facilitate the re-growth of another forest, which requires full sunlight to regenerate and grow efficiently. Clear cutting is also used to create early successional wildlife habitat.

“Cluster Development” means a development pattern where building sites are concentrated on a portion of a parcel proposed for development, usually on land with the lowest resource value, to allow the remaining undeveloped portion to be used for preservation of existing natural or historic resources, agricultural use, or common open space. Clustering for the purposes of this definition includes “cluster development,” lot size averaging, noncontiguous clustering, and similar methods allowed by the Municipal Land Use Law.

“Community Forestry Plan” means a guidance document designed for a municipality which deals with the care and management of trees, individually or in groups, growing within developed areas. Community Forestry Plans are developed for a five year period.

“Conditional Water Availability” means the amount of additional water availability allowed in a deficit HUC14 subwatershed, subject to certain mitigation requirements.

“Conservation Zone” means those areas identified on the Land Use Capability Zone Map consisting of significant agricultural lands and limited low-density development, with interspersed environmental features that should be preserved when possible.

“Conservation Zone – Environmentally Constrained Sub-Zone” means those areas identified on the Land Use Capability Zone Map within the Conservation Zone that have significant environmental features that should be preserved and protected from non-agricultural development.

“Consumptive Water Use” means water that is evaporated, transpired, incorporated into products or crops, consumed by humans or animals or otherwise removed from a watershed or subwatershed other than by conveyances as potable water or wastewater.

“Critical Habitat Areas” means land areas that are Critical Wildlife Habitats, Significant Natural Areas, or Vernal Pool Buffers.

“Critical Wildlife Habitats” means habitats for rare, threatened or endangered wildlife species as identified through the Landscape Project of the New Jersey Department of Environmental Protection.

“Current Deficit Areas” means a HUC14 subwatershed where Net Water Availability is less than zero.

“Deforestation” means the permanent conversion of forested areas to non-forested land use such as urban land, pasture or other non-forest land cover or land use.
“Depletive Water Use” means water which is withdrawn from a HUC14 subwatershed and transported outside of the subwatershed (through utility conveyances as potable water or wastewater) resulting in a net loss of water to the subwatershed from which the water originated.

“Development” means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or other structure, or of any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission may be required pursuant to the Municipal Land Use Law. (Section 3 and MLUL (C.40:55D-4))

“Eco-tourism” means business opportunities related to natural areas and natural resources that do not involve modification or consumption of the natural resources, usually involving the public spending money in areas of significant natural values by environmentally responsible travel to such natural and recreational areas in order to appreciate nature and promote conservation. Eco-tourism activities have a low visitor impact and provide for beneficially active socio-economic involvement of local residents and businesses. Eco-tourism can include such activities as hiking, biking, boating, canoeing, fishing and observing wildlife.

“End Use Factor” means a factor to be applied in the Highlands Development Credit Program allocation process that recognizes that the relative value of land varies according to the end use to which a parcel of land can be developed.

“Enhancement” means the manipulation of the physical, chemical, or biological characteristics of a site to heighten, intensify, or improve specific function(s) or for a purpose such as water quality improvement, flood water retention or wildlife habitat.

“Existing Areas Served” means areas connected to either an existing public wastewater collection system or public water distribution system where such infrastructure is already constructed. It does not include areas of designated sewer service areas or water service franchise area where the collection, transmission or distribution systems do not currently exist.

“Existing Community Zone” means those areas identified on the Land Use Capability Zone Map consisting of extensive and intensive existing development which may have capacity to support additional human development without adversely affecting the ecological value of the Highlands Region.

“Existing Community Zone – Environmentally Constrained Sub-Zone” means those areas identified on the Land Use Capability Zone Map within the Existing Community Zone that have high resource value and limited or no capacity for on-site human development without adversely affecting the ecological value of the Highlands Region.

“Existing Constrained Areas” means HUC14 subwatersheds which contribute water flows to a Current Deficit Area.

“FAR” means Floor Area Ratio, which is the ratio of total floor area to land area.

“Farm Conservation Plan” means a site specific plan that prescribes needed land treatment and related conservation and natural resource management measures, including forest management practices, that are determined to be practical and reasonable for the conservation, protection, and development of natural resources, the maintenance and enhancement of agricultural or horticultural productivity, and the control and prevention of non-point source pollution. (Section 3)

“Farm Labor Housing” means housing constructed on a commercial farm as defined by the Right to Farm Act, N.J.S.A. 4:1C-1 et seq., for any person (and the family of such person) who receives a
substantial portion of his or her income from primary production of agricultural or aquacultural commodities or the handling of such commodities in the unprocessed stage.

“Farm Management Unit” means a parcel or parcels of land, whether contiguous or noncontiguous, together with agricultural or horticultural buildings, structures and facilities, producing agricultural or horticultural products, and operated as a single enterprise. (Section 3)

“Forest Conservation Plan” means a plan that applicants prepare, for municipal approval during the local development review process, that would serve to protect existing trees on development and redevelopment sites to maintain the maximum forest cover long term.

“Forest Management Plan” means a tool which evaluates a forest land’s current state and provides a management process with which, over time, meets the landowner’s management objectives, while maintaining health and vigor of the resource. This written guidance document describes the forest resources present on the property, the landowner's management goals and objectives, and the recommended practices or activities to be carried out over time on the land. Forest Management plans are typically written for a ten year period.

“Forest Mitigation Plan” means a plan that applicants prepare, for municipal approval during the local development review process, which will designate and design reforestation projects to mitigate ecosystem function losses resulting from deforestation as part of an alteration of land use. Mitigation can be completed on or off site in designated mitigation areas.

“Forest Resource Area” means areas that include high ecological value forest areas including those forested areas that exhibit the least fragmentation and are vital for the maintenance of ecological processes.

“Forest Stewardship Plan” means a guidance document which a property owner can follow to meet long-term conservation objectives for forest land. A Stewardship Plan considers all aspects of forest resource management, including soils and water quality, wildlife and fish habitat, outdoor recreation, aesthetics, timber and other wood products. A search for the presence of Threatened and Endangered Species through the Natural Heritage Database is a requirement for a Forest Stewardship Plan.

“GIS” means Geographic Information Systems which is a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information. GIS also includes the procedures, operating personnel, and spatial data that go into the system.

“Grayfields” are sites usually containing industrial or commercial facilities or land uses, exhibiting signs of abandonment or underutilization in areas with existing infrastructure, but without evidence or expectation of contamination. Grayfields may also include a residential component.

“Greenfield” means farmland and open or wooded areas where there has been no prior development activity.

“Green Infrastructure” means a system or network of open, vegetated lands that provide important environmental and recreational functions. Green infrastructure may be agricultural, recreational and/or historic lands and include natural resources such as trees, streams, wetlands, and open space. Green infrastructure is not limited to rural landscapes, but may also include street trees, town parks, waterfronts, landscaped buffers, and other open spaces within developed areas that provide public benefits through natural features.

“Green Streets” means an innovative approach to street design which seeks to integrate natural processes and Green Infrastructure, especially with regard to the management of street runoff.
“**Ground Water Availability**” means the rate of ground water use that can occur in an area without contravening the goals and objectives of the Highlands Act. It is that portion of the ground water capacity of a HUC14 subwatershed that can be provided for human use without harm to other ground water users, aquatic ecosystems or downstream users.

“**Ground Water Capacity**” means the natural ability of a subwatershed to support stream flow over time during dry weather conditions based on the Low Flow Margin component of the Low Flow Margin of Safety Method.

“**Growth-inducing**” means ways in which a proposed action could either directly or indirectly foster economic or population growth or the construction of additional housing, in the surrounding environment, that is not a component of the proposed action.

“**GSR-32**” means the New Jersey Geological Survey method for ground water recharge mapping (GSR-32) that differentiates rates of precipitation infiltration to ground water among land areas within single watersheds or subwatersheds. It can be used to determine which land areas can be considered prime ground water recharge areas on a relative basis.

“**Habitat Conservation and Management Plan**” means written guidance, approved by the Highlands Council, that conforming municipalities and counties must include in master plans and development regulations that may include, but not be limited to, performance and design standards for development within or adjacent to critical habitat, restoration of the ecological functions and processes of impaired or disturbed critical habitat, procedures for modifications to critical habitat areas, prevention of habitat fragmentation through open space preservation, and corporate, non-profit and community involvement in creating, protecting and restoring habitat.

“**Heritage tourism**” means business opportunities related to historic, cultural and archeological resources that do not involve modification of these resources, usually involving the public spending money in areas of significant heritage values by traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past and present.

“**Higher Intensity Receiving Zone**” means a Receiving Zone in the Highlands Development Credit Program that will require appropriate public water and wastewater infrastructure with capacity to accommodate additional or new growth and which is proximate to existing developed lands and multi-modal transportation infrastructure. Areas that serve as a Higher Intensity Receiving Zone will have a minimum net residential density of 5 dwelling units per acre or its residential unit equivalent for non-residential development.

“**High Integrity Forest Subwatersheds**” means those HUC14 subwatersheds that are predominantly forested and include a high proportion of unfragmented forest cover.

“**Highlands Development Credit**” means an entitlement in the form of transferable interest allocated to land with limited capacity for development without adversely affecting ecological integrity which can be used to increase the density or intensity of development in a designated Receiving Zone.

“**Highlands Development Credit Bank**” means a development transfer bank established by the Highlands Council to assist the Highlands Council in implementing the Highlands Development Credit Program.

“**Highlands Development Credit Certificate**” means a document representing one Highlands Development Credit. Each Highlands Development Credit Certificate will list the parcel by block and lot from which the Highlands Development Credit was separated, the parcel owner’s name, the
date of award, and a specific identification number for that particular Highlands Development Credit.

“Highlands Domestic Sewerage Facilities” means wastewater treatment works that provide wastewater treatment primarily of sanitary sewage rather than industrial wastewater as a public utility and may include service areas and treatment capacities sufficient to support redevelopment and regional growth opportunities.

“Highlands Forest Products” means any raw material yielded by a forest in the Highlands Region including timber, timber products and other forest land materials (such as rock, stone, clay, sand, gravel).

“Highlands Historic and Cultural Resource Inventory” means the listing of historic, archaeological and cultural resources within the Highlands Region, including but not limited to: 1) all properties listed on the State or National Register of Historic Places; 2) all properties which have been deemed eligible for listing on the State or National Register; and 3) all properties for which a formal opinion of the State Historic Preservation Office (SHPO) has been issued.

“Highlands Municipal Property Tax Stabilization Board” means a board established pursuant to N.J.S.A. 13:20-19 and responsible for determining the valuation base of a qualified municipality, whether fiscal stress has been caused by the implementation of the Highlands Act in a qualified municipality, and the amount due to a qualified municipality to compensate for a decline in the aggregate true value of vacant land directly attributed to the implementation of the Highlands Act.

“Highlands Open Waters” means all springs, wetlands, intermittent and ephemeral streams, perennial streams and bodies of surface water, whether natural or artificial, located wholly or partially within the boundaries of the Highlands Region, but shall not mean swimming pools. (Section 3)

“Highlands Public Community Water Supply Systems” means public water supply systems in the Highlands Region that pipe water for human consumption to at least either 15 service connections or one that regularly serves at least 25 year-round residents.

“Highlands Redevelopment Areas” means land areas designated as such by the Highlands Council that are brownfields, grayfields and/or other previously developed areas within the Highlands Region.

“Highlands Scenic Resource Inventory” means the inventory of regionally significant lands within the Highlands Region that encompasses elements of high scenic quality worthy of protection, which is developed in coordination with local governments and maintained by the Highlands Council.

“Historic Resource” means any building, structure, object, district, site or area that is significant in the history, architecture, archaeology or culture of a place and/or time.

“HUC14 subwatershed” means a delineated area within which water drains to a particular receiving surface water body (i.e., a watershed), which is identified by a 14 digit number, or “hydrologic unit code.” The hydrologic unit codes (HUCs) were developed by the U.S. Geological Survey. In the Regional Master Plan, the term HUC14 correlates to a subwatershed. A subwatershed is a subdrainage area within a watershed. The only difference between watershed and subwatershed is scale.

“Hydrologic Unit Map” means a map that shows hydrologic boundaries of water resources regions, river basins, watersheds, and subwatersheds.
“Impact Fee” means cash or in-kind payments required to be paid by a developer as a condition for approval of a major subdivision or major site plan for the developer’s proportional share of the cost of providing new or expanded reasonable and necessary public improvements located outside the property limits of the subdivision or development but reasonably related to the subdivision or development based upon the need for the improvement created by, and the benefits conferred upon, the subdivision or development. (Section 3)

“Impervious surface” means any structure, surface, or improvement that reduces or prevents absorption of stormwater into land, and includes porous paving, paver blocks, gravel, crushed stone, decks, patios, elevated structures, and other similar structures, surfaces, or improvements. (Section 3)

To be considered an impervious surface, the structure, surface or improvement must have the effect of reducing or preventing stormwater absorption.

“Infill Development” means development of vacant or partially developed parcels which are surrounded by or in close proximity to areas that are substantially or fully developed.

“Lake Community Sub-Zone” means those areas identified on the Land Use Capability Zone Map within the Existing Community Zone that are within 1,000 feet of lakes that are 10 acres or greater in size. This sub-zone has unique policies to prevent degradation of water quality, harm to lake ecosystems, and natural aesthetic values.

“Land Use Capability Map Series” means the series of official maps of the Highlands Regional Master Plan, which divides the Region into three primary overlay zones and three sub-zones based upon natural resource protection, preservation of agricultural landscapes, existing development patterns and economic growth opportunities. The series includes the Land Use Capability Zone Map, the Land Use Capability Water Availability Map, the Land Use Capability Public Community Water Systems Map, the Land Use Capability Domestic Sewerage Facilities Map and the Land Use Capability Septic System Yield Map and serves as the land use capability map as provided for in the Highlands Act.

“LEED Green Building Rating System™” means Leadership in Energy and Environmental Design (LEED) and is the common name of the Green Building Rating System. The LEED rating system has been formulated by the U.S. Green Building Council and encompasses the standards that many builders, architects, landscape architects, engineers and planners are incorporating into their professional disciplines. LEED is a rating system which gives points for meeting specific green building, sustainable design and smart growth goals. LEED standards have been developed and adopted for sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality.

“LiDAR” means Light Detection And Ranging technology. It uses an active sensor, similar to radar, that transmits laser pulses to a target and records the time it takes for the pulse to return to the sensor receiver. This technology is used for high-resolution topographic mapping.

“Live-work” means use of a structure as a place of residence and a place of employment and commerce which may involve the presence of non-resident employees and customers.

“Local Government Unit” means a municipality, county, or other political subdivision of the State, or any agency, board, commission, utilities authority or other authority, or other entity thereof. (Section 3)

“Lower Intensity Receiving Zone” means a Receiving Zone in the Highlands Development Credit Program that has a residential density below 5 dwelling units per acre or its residential unit equivalent for non-residential development, but which provides some amount of bonus residential
density or increase in non-residential intensity above base zoning which is consistent with existing community character. In many cases, a Lower Intensity Receiving Zone will be located in areas where the community character is more rural or suburban.

“Low Flow Margin of Safety Method” means the method developed by the New Jersey Department of Environmental Protection that is an ecologically-oriented approach for the purpose of defining ground water capacity based on a percentage of the margin between two stream low flow statistics, September median flow and the seven day-ten year low flow (7Q10).

“Low Impact Development” means site design strategies developed to minimize and/or prevent adverse stormwater runoff impacts through sound site planning and both nonstructural and structural techniques that preserve or closely mimic the natural or pre-development hydrology of the site.

“Major Highlands Development” means except as otherwise provided pursuant to subsection a. of section 30 of the Highlands Act, (1) any non-residential development in the preservation area; (2) any residential development in the preservation area that requires an environmental land use or water permit or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more; (3) any activity undertaken or engaged in the preservation area that is not a development but results in the ultimate disturbance of one-quarter acre or more of forested area or that results in a cumulative increase in impervious surface by one-quarter acre or more on a lot; or (4) any capital or other project of a State entity or local government unit in the preservation area that requires an environmental land use or water permit or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more. Major Highlands development shall not mean an agricultural or horticultural development or agricultural or horticultural use in the preservation area. (Section 3)

“Market Adjustment Factor” means a factor to be applied in the Highlands Development Credit Program allocation process that recognizes that per unit value of land varies by location within the Highlands Region.

“Master Plan” means for a municipality, a composite of one or more written or graphic proposals for the development of the municipality as set forth in and adopted pursuant to section 19 of the Municipal Land Use Law (N.J.S.A. 40:55D-28), and for a county, means a composite of the master plan for the physical development of the county, with the accompanying maps, plats, charts and descriptive and explanatory matter adopted by the county planning board pursuant to N.J.S.A. 40:27-2.

“Mixed use development” means a pattern of development where uses such as residential, commercial and office are mixed vertically and/or horizontally in the context of shared infrastructure and integrated design.

“Mobile sources” means moving motorized devices that release pollution. Mobile sources include but are not limited to cars, trucks, buses, planes, trains, motorcycles and gasoline-powered lawn mowers.

“Multi-modal” means a transportation infrastructure where there are many modes of transportation (e.g., roads, mass transit, airport, ferry) connecting or converging into an accessible location.

“Municipal Assessment Report” means the document prepared by a municipality as part of the Petition for Plan Conformance that details the findings and conclusions of the municipality’s self-
assessment of how well their municipal plans, regulations and programs conform with the goals, requirements and provisions of the Highlands Regional Master Plan.

“National Ambient Air Quality Standards (NAAQS)” means standards established by the EPA that apply to outdoor air throughout the country.

“National Historic Landmark” means a designation given by the National Park Service to a property of national significance. Properties designated as National Historic Landmarks are automatically listed in the National Register of Historic Places.

“National Register of Historic Places” means the nation’s official list of cultural and historic resources worthy of preservation. Properties listed include buildings, structures, objects, sites, and districts. Properties can be nominated by the State Historic Preservation officer. The list is maintained by the Secretary of the United States Department of the Interior under authority of the National Historic Preservation Act.

“Net Water Availability” means the value resulting from subtracting the impacts of consumptive and depletive surface and ground water uses from ground water availability.

“New Jersey Register of Historic Places” means the State’s official listing of cultural and historic resources worthy of preservation. Any National Register listing is automatically placed on the State Register; although the State utilizes the same criteria to determine eligibility, not all State Register listings are deemed eligible for the National Register.

“Nitrates” means an inorganic compound with an ion composed of one atom of nitrogen and three atoms of oxygen. Nitrates are one of the most common ground water pollutants in rural areas. The origin of nitrates in ground water is primarily from fertilizers, septic systems, and manure storage or spreading operations.

“NJDEP” means the State of New Jersey Department of Environmental Protection.

“NJDEP Highlands Preservation Area Rules” means the regulations established to implement requirements of the Highlands Act codified at N.J.A.C. 7:38-1.1 et seq.

“NJDA” means the State of New Jersey Department of Agriculture.

“NJDOT” means the State of New Jersey Department of Transportation.

“NJ Transit” means the State of New Jersey Transit Corporation.

“NJTPA” means the North Jersey Transportation Planning Authority.

“Non-point source pollution” means pollution which cannot be traced back to a single origin or source, including such sources as stormwater runoff, water runoff from urban areas and failed septic systems. Non-point source pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and underground sources of drinking water.

“Open Space/Conservation Design Development” means a creative land use technique using an open space ratio that allows a community to guide growth to the most appropriate areas within a parcel of land to avoid impacts to the environment and to protect the character-defining features of the property.

“Petition for Plan Conformance” means the formal submission of documents to the Highlands Council by a local government for consideration of Plan Conformance. The submission shall
include the Municipal Assessment Report, the community vision (if available), and all supporting documentation, (e.g., municipal master plan, zoning ordinances, resource protection ordinances).

“Plan Conformance” means the process for local governments to align local plans, regulations and programs with the goals, requirements and provisions of the Highlands Regional Master Plan pursuant to the Highlands Act.

“Plan Conformance Guidelines” means the manual outlining the procedures and requirements for Plan Conformance.

“Planning Area” means lands within the Highlands Region which are not within the Preservation Area. (Section 3)

“Preservation Area” means those lands within the Highlands Region which are designated as the Preservation Area by N.J.S.A. 13:20-7b. (Section 3)

“Prime Ground Water Recharge Areas” means lands with the best ground water recharge rates within a HUC14 subwatershed, as indicated by GSR-32 analysis, that provide forty percent (40%) of the total recharge volume for the subwatershed.

“Protection Zone” means those areas identified on the Land Use Capability Zone Map consisting primarily of high resource value lands in terms of forest resources, critical habitat, water quality and quantity and ecological function and having limited or no capacity to support human development without adversely affecting overall ecological function of the Highlands Region.

“Receiving Zone” means land designated by a local government and approved by the Highlands Council as suitable for TDR Density, provided Highland Development Credits are used for that development.

“Redevelopment” means the process of removal and replacement, or adaptive reuse of an existing structure(s), transforming an underutilized area into an economically viable and productive part of the community.

“Residential Site Improvement Standards (RSIS)” means site improvement standards for residential development established by the Site Improvement Advisory Board (C.40:55D-40.3) and the New Jersey Department of Community Affairs.

“Resource Management Systems Plan” means a site specific conservation system plan that (1) prescribes needed land treatment and related conservation and natural resource management measures, including forest management practices, for the conservation, protection, and development of natural resources, the maintenance and enhancement of agricultural or horticultural productivity, and the control and prevention of non-point source pollution, and (2) establishes criteria for resources sustainability of soil, water, air, plants, and animals. (Section 3)

“Restoration” means the reestablishment of pre-disturbance ecological or water related functions and related physical, chemical and biological characteristics. Ecological restoration is the process of returning an ecosystem as closely as possible to pre-disturbance conditions and functions.

“Riparian Area” means lands adjacent to and hydrologically connected with rivers, streams and that may be subject to periodic inundation or saturation of soils or are located within three hundred (300) feet of lakes, streams and rivers.

“Safe Yield” means the amount of water that can be provided from a water supply system over a repeat of the drought of record, reflecting passing flows requirements, demand patterns, watershed conditions and precipitation patterns, as determined by NJDEP.
“Scenic Resource” means a site or landscape that represents an important ingredient in the quality of life of a community or an area and possesses visual integrity and scenic beauty. Scenic resources may include prominent ridgelines, mountainsides or hillsides, panoramic vistas, scenic corridors, community gateways and landmarks, agricultural landscapes, etc.

“Sending Zone” means an area or areas designated in a master plan and zoning ordinance, for purposes of participating in the Highlands Development Credit Program, within which development is restricted in light of the requirements of the Highlands Act.

“Shared parking” means the practice of multiple uses with different peak parking demands using the same parking spaces on a non-concurrent shared basis, for the purposes of reduced parking infrastructure, improved economic efficiency, and improved site design.

“Significant Natural Area” means a regionally significant ecological community in the Highlands Region.

“Smart Growth” means the strategic approach to development decisions which uses planning to guide, design, develop, revitalize and build communities that: convey a unique sense of community and place; preserve and enhance valuable natural and cultural resources; equitably distribute the costs and benefits of development; expand the range of transportation, employment and housing choices in a fiscally responsible manner; value long-range, regional considerations of sustainability over short term incremental geographically isolated actions; and promote public health and healthy communities.

“Special Environmental Area” means an area in the Highlands Region which should not be developed in order to protect water resources and environmentally sensitive lands based upon Regional Master Plan Conservation Priority Area rank, and the potential to a) protect water supply reservoirs and other critical water features, b) create large contiguous areas of environmentally sensitive lands, c) create habitat corridors, and d) connect existing preserved open space. Existing land use patterns shall be considered to minimize conflicts between the designation of a Special Environmental Area and ongoing land uses.

“State Entity” means any State department, agency, board, commission, or other entity, district water supply commission, independent State authority or commission, or bi-state entity. (Section 3)

“Stationary sources” means places or objects from which air pollutants are released and which are not mobile. Stationary sources include but are not limited to power plants, gas stations, incinerators and houses.

“TDR Density (bonus density)” means, in a Receiving Zone, either the amount by which development can exceed base zoning or the right to develop a use not permitted under the base zoning with the use of Highlands Development Credits.

“Teardown(s)” means the practice of demolishing an existing residential structure and replacing it with a new house which is significantly larger that the demolished house.

“Temporary Coverings” means permeable, woven and non-woven geotextile fabrics that allow for water infiltration or impermeable materials that are in contact with the soil and are used for no more than two consecutive years. (Section 3)

“Total Maximum Daily Load (TMDL)” means the pollutant loading that a surface water body may assimilate without violating the Surface Water Quality Standards and a determination of the extent to which pollutant loads to a water body must be reduced to restore that water body to a water quality that complies with the Surface Water Quality Standards. A TMDL includes an
allocation of allowable pollutant loads to specific point sources (Wasteload Allocations) and categories of non-point sources (Load Allocations), after subtraction of a Margin of Safety and, where appropriate, a Reserve Capacity (for future pollutant loads).

“Transfer of Development Rights (TDR)” means a land use tool that permits a community to utilize market forces to encourage the transfer of development potential from areas that the community wants to preserve, called Sending Zones, to areas that are more appropriate to accommodate increased growth, called Receiving Zones. In exchange for removing development potential from lands in a Sending Zone, a property owner receives compensation in the form of development rights that may be sold for use in increasing density or intensity of use in a Receiving Zone.

“Transit-Oriented Development (TOD)” means a development pattern of moderate to higher density, located within walking distance of a major transit stop. TODs generally have a mix of residential, employment and shopping opportunities and are designed for pedestrians without excluding the automobile.

“Vernal Pools” means confined, ephemeral wet depressions that support distinctive, and often endangered, species that are specially adapted to periodic extremes in water pool levels.

“Water Management Plan” means a plan to establish limitations on the use of water through proactive management of the available water resources and natural and man-made infrastructure delivering that water for household, agricultural, institutional, commercial, industrial and ecological uses.

“Wellhead Protection Area” means the area surrounding a public community or public non-community water supply well from which ground water is captured by well pumping at a specified rate for a specified period of time.
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N.J.S.A.  
13:20-1 | Title of the Act | This act shall be known, and may be cited, as the “Highlands Water Protection and Planning Act”. | Chapter I, Part 3 |
| Section 2  
N.J.S.A.  
13:20-2 | Legislative Findings and Declarations | Enacts legislation setting forth a comprehensive approach to protection of the water and other natural resources of the Highlands Region. | Chapter I, Part 3 |
| Section 3  
N.J.S.A.  
13:20-3 | Definitions | Provides definitions for terms used throughout the Highlands Act. | Glossary |
| Section 4  
N.J.S.A.  
13:20-4 | Establishment of Highlands Water Protection and Planning Council | Establishes the Council and allocates that it is in NJDEP, but shall be independent of any supervision or control by NJDEP. | Chapter I, Part 4 |
| Section 5  
N.J.S.A.  
13:20-5 | Council members appointment and qualifications; service | Establishes the number of Council members; the means of appointment; Council member terms; and rules regarding Council meetings. | Chapter I, Part 4 |
| Section 6  
N.J.S.A.  
13:20-6 | Establishes the powers, duties and responsibilities of the Highlands Water Protection and Planning Council | Prepare a Regional Master Plan (RMP). | Chapter I, Part 4 |
| Section 7  
N.J.S.A.  
13:20-7 | Boundaries of Highlands Region | Establishes the geographic boundaries of the Highlands Region, including Preservation Area boundaries | Chapter I, Part 3 |
| Section 8  
N.J.S.A.  
13:20-8 | Regional Master Plan | Mandates preparation of the RMP with the requirement that it be updated at least once every six years and identification of receiving zones and capacities therefore. | Chapter I, Part 3 |
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| Section 9  
N.J.S.A.  
13:20-9 | Preparation or revision of regional master plan; consultation with advisory groups | Mandates that the Council coordinate with agencies and scientific organizations during preparation of or revisions to RMP. | Chapters V and VI |
|         |             | Mandates that redevelopment sites in the Preservation Area shall be either a brownfield site designated by the NJDEP or a site in which at least 70% of the area features impervious surface. | Chapter II, Part 6, Subpart c  
Chapter IV, Part 6, Subpart e  
Chapter V, Part 6 |
|         |             | Mandates that rules or regulations adopted do not compromise provisions under "Right to Farm Act". | Chapter IV, Part 3  
Chapter V, Part 3 |
| Section 10  
N.J.S.A.  
13:20-10 | Goals of Regional Master Plan | Protect, restore, and enhance the quality and quantity of surface and ground waters. | Chapter II, Part 1, Subpart b.  
Chapter IV, Part 1, Subpart b  
Chapter VI, Part 1 |
|         |             | Preserve extensive contiguous areas of land in its natural state. | Chapter II, Part 1  
Chapter IV, Part 1  
Chapter V, Part 1 |
|         |             | Protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests, wetlands, vegetated stream corridors, steep slopes, and critical habitat for fauna and flora. | Chapter II  
Chapter IV  
Chapter V |
|         |             | Preserve farmland and historic sites. | Chapter II, Parts 3 and 4  
Chapter IV, Parts 3 and 4  
Chapter V, Parts 3 and 4 |
|         |             | Promote conservation of water resources. | Chapter II, Part 2  
Chapter IV, Part 2  
Chapter V, Part 2 |
|         |             | Promote brownfield remediation and redevelopment. | Chapter II, Part 6, Subpart c  
Chapter IV, Part 6, Subpart e  
Chapter V, Part 6 |
|         |             | Promote compatible agricultural, horticultural, recreational, and cultural uses and opportunities within the framework of protecting the | Chapter II, Parts 3 and 4  
Chapter IV, Parts 3 and 4  
Chapter V, Parts 3 and 4 |
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|         | Highlands environment. | Prohibit or limit development which is incompatible with protection of Preservation Area. | Chapter II  
Chapter IV  
Chapter V |
|         | For Planning Area, encourage, consistency with the State Development and Redevelopment Plan and smart growth strategies and principles, appropriate patterns of compatible residential, commercial, and industrial development, redevelopment, and economic growth. | For Planning Area, promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility in the Highlands Region. | Chapter II, Part 5  
Chapter IV, Part 5  
Chapter V, Part 5 |
| Section 11  
N.J.S.A.  
13:20-11 | Mandatory Contents of RMP | A Resource Assessment that determines the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain while still maintaining the overall ecological values. | Chapter II |
|         |             | A Resource Assessment that includes an assessment of scenic, aesthetic, cultural, historic, open space, farmland, and outdoor recreation resources. | Chapter II |
|         |             | A financial component, together with a cash flow timetable. | Chapter II, Part 8  
Chapter IV, Part 8  
Chapter V, Part 8 |
|         |             | A component to provide for the maximum feasible local government and public input into the council's operations. | Chapter VI, Part 1 |
|         |             | A coordination and consistency component which details the ways in which local, State, and federal programs and policies | Chapter VI |
Provisions of the Highlands Act Continued

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|         |             | may best be coordinated to promote the goals, purposes, policies, and provisions of the regional master plan. | Chapter II, Part 5  
               Chapter IV, Part 5  
               Chapter V, Part 5 |
|         |             | A transportation component that provides a plan for transportation system preservation. | Chapter II, Part 5  
               Chapter IV, Part 5  
               Chapter V, Part 5 |
|         |             | A smart growth component and a land use capability map. | Chapter II, Part 6, Subpart d  
               Chapter III, Part 6  
               Chapter IV, Part 6, Subpart d  
               Chapter V, Part 6 |
| Section 12 | Additional Contents of RMP | Mandates a land use capability map and a comprehensive statement of policies for planning and managing the development and use of land in the Preservation Area. | Chapter III  
               Chapter IV |
| Section 13 | Transfer of development rights program | The Council shall use the regional master plan elements prepared pursuant to Sections 11 and 12 of this Act, to establish a transfer of development rights program for the Highlands Region that furthers the goals of the RMP. | Chapter II, Part 7  
               Chapter IV, Part 7  
               Chapter V, Part 7 |
<p>| Section 14 | Revisions of municipal/county master plan and development regulations by Preservation Area municipalities and counties | Each municipality located wholly or partially in the Preservation Area shall submit to the Council such revisions of its municipal master plan as may be necessary to conform to the goals, requirements, and provisions of the RMP. | Chapter VI, Part 1, Subpart 1 |
| Section 15 | Revisions of municipal/county master plan and development regulations | Any municipality or county located in the Planning Area may, by ordinance, petition the council of its intention to | Chapter VI, Part 1, Subpart 1 |</p>
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<tr>
<td>Section 16</td>
<td>by Planning Area municipalities and counties</td>
<td>revise its master plan and development regulations to conform to the goals, requirements, and provisions of the RMP.</td>
<td>Chapter VI, Part 2</td>
</tr>
<tr>
<td>Section 16</td>
<td>State or local government projects involving disturbance of two or more acres of land; review by Council</td>
<td>Within the Preservation Area, any capital or other project of a State entity or local government unit that involves the ultimate disturbance of two acres or more of land or a cumulative increase in impervious surface by one acre or more shall be submitted to the Council for review.</td>
<td>Chapter VI, Part 2</td>
</tr>
<tr>
<td>Section 17</td>
<td>Review by Council of application for development</td>
<td>Subsequent to adoption of the Regional Master plan, the Council may review any application for development in the Preservation Area where certain thresholds are exceeded.</td>
<td>Chapter VI, Part 2</td>
</tr>
<tr>
<td>Section 18</td>
<td>State aid for smart growth projects; other financial and technical assistance for revisions of master plan</td>
<td>Any municipality or county in the Highlands Region whose master plan and development regulations have been approved by the Council to be in conformance with the RMP shall qualify for State aid, planning assistance, technical assistance, and other benefits and incentives.</td>
<td>Chapter II, Part 8</td>
</tr>
<tr>
<td>Section 19</td>
<td>Highlands Municipal Property Tax Stabilization Board</td>
<td>There is established in the Department of the Treasury the &quot;Highlands Municipal Property Tax Stabilization Board,&quot; which shall establish procedures for determining the valuation base of a qualified municipality, whether fiscal stress has been caused by the implementation of the Act in a qualified municipality, and the amount due a qualified municipality to compensate for a decline in the aggregate true value of vacant land directly attributable to the implementation of the Act.</td>
<td>Chapter II, Part 8</td>
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<th>Section</th>
<th>Description</th>
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<th>Where Addressed in RMP</th>
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| Section 20  
N.J.S.A. 13:20-20 | Pinelands Property Tax Assistance Fund | The State Treasurer shall annually credit, in each of the first five years after enactment of the Act, to the "Pinelands Property Tax Assistance Fund" from the "Highlands Protection Fund". | Chapter II, Part 8 |
| Section 21  
N.J.S.A. 13:20-19 | Highlands Protection Fund | There is created in the Department of the Treasury a special non-lapsing fund to be known as the "Highlands Protection Fund". | Chapter II, Part 8  
Chapter IV, Part 8  
Chapter V, Part 8 |
| Section 22  
N.J.S.A. 13:20-20 | Legal representation | The council shall provide legal representation to any requesting local government unit located in the Highlands Region in any cause of action filed against the local government unit and contesting an act or decision of the local government unit taken or made under authority granted pursuant to the "Municipal Land Use Law". | Chapter II, Part 8  
Chapter IV, Part 8  
Chapter V, Part 8 |
| Section 23  
N.J.S.A. 13:20-21 | Guidelines to municipalities regarding applications for development submitted after the date of Act enactment and before adoption of RMP | Within 10 days after the date of enactment of this act, the Department of Community Affairs, in consultation with the NJDEP, shall provide guidelines and instructions to all local government units located wholly or partially within the Preservation Area with respect to the processing, review, and enforcement of applications for development after the date of enactment of this act and before adoption of the Regional Master Plan. | |
| Section 24  
N.J.S.A. 13:20-22 | Municipal and county master plans and regulations presumption of validity | The municipal master plan and development regulations of any municipality, and the county master plan and associated regulations of any county, located in the Highlands Region which have been approved by the council to be in conformance with the Regional Master Plan in | Chapter VI, Part 1 |
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<td>Section 25</td>
<td>Allocation of prospective fair share of housing need; consideration of Regional Master Plan</td>
<td>The Council on Affordable Housing shall take into consideration the Regional Master Plan prior to making any determination regarding the allocation of the prospective fair share of the housing need in any municipality in the Highlands Region under the &quot;Fair Housing Act&quot;.</td>
<td>Chapter II, Part 6  Chapter IV, Part 6, Subpart g  Chapter V, Part 6  Chapter VI, Part 1</td>
</tr>
<tr>
<td>Section 26</td>
<td>Modification of site improvement standards for residential development</td>
<td>Analysis and modification, by the Site Improvement Advisory Board and the Commissioner of Community Affairs, of the site improvement standards for residential development to determine if they are appropriate and sufficiently protective for the Highlands Region.</td>
<td>Chapter II, Parts 5 and 6, Subpart d  Chapter IV, Parts 5 and 6  Chapter V, Parts 5 and 6</td>
</tr>
<tr>
<td>Section 27</td>
<td>Action or proceeding for injunctive relief by Council for violation of Highlands Act</td>
<td>The Council may institute an action or proceeding in Superior Court for injunctive relief for any violation of this Act, or any rule or regulation adopted pursuant thereto, or, in the Preservation Area for any violation of, or nonconformance with, the Regional Master Plan.</td>
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<tr>
<td>Section 28</td>
<td>Final agency action; judicial review; relief</td>
<td>Any decision rendered or action taken by the Council pursuant to this Act shall be a final agency action subject to judicial review in the Appellate Division of the Superior Court of New Jersey in accordance with the Rules of Court.</td>
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</tr>
<tr>
<td>Section 29</td>
<td>Annual report</td>
<td>On or before March 31 in each year, the Council shall make an annual report of its activities for the preceding calendar year to the Governor, the Legislature, and the governing</td>
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## Provisions of the Highlands Act Continued

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<tr>
<td>Section 30 N.J.S.A. 13:20-28</td>
<td>Exemptions from the Highlands Act</td>
<td>Provides a list of 17 exemptions from the Highlands Act, the RMP, any rules or regulations adopted by NJDEP pursuant to the Act, or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit to specifically conform them to the RMP.</td>
<td>Chapter II, Part 7</td>
</tr>
<tr>
<td>Section 31 N.J.S.A. 13:20-29</td>
<td>Increases in impervious surface of an agricultural area trigger requirement of farm conservation plan</td>
<td>Any agricultural or horticultural development in the Preservation Area that would result in the increase, after the date of enactment of this Act of agricultural impervious cover by three percent or more of the total land area of a farm management unit in the Preservation Area shall require the review and approval by the local soil conservation district of a farm conservation plan.</td>
<td>Chapter II, Part 3 Chapter IV, Part 3 Chapter V, Part 3</td>
</tr>
<tr>
<td>Section 32 N.J.S.A. 13:20-30</td>
<td>Development standards for Preservation Area prior to effective date of the rules and regulations adopted by NJDEP</td>
<td>The Highlands Preservation Area Approval from NJDEP shall consist of the related aspects of other regulatory programs.</td>
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<td>A prohibition on major Highlands development within 300 feet of any Highlands Open Waters in the Preservation Area</td>
<td>Chapter II, Part 1, Subpart b</td>
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<td>The quality of all Highlands Open Waters within the Preservation Area shall be maintained, restored, or enhanced.</td>
<td>Chapter II, Part 1, Subpart b</td>
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<td>Any diversion of more than 50,000 gallons per day shall require a permit pursuant to the &quot;Water Supply Management Act.&quot; Any new or increased diversion for nonpotable purposes that is more than 50% consumptive shall require an equivalent reduction in water demand within the same subdrainage area through such means as groundwater recharge of stormwater or reuse.</td>
<td>Chapter II, Part 2</td>
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<td>A zero net fill requirement for flood hazard areas pursuant to the &quot;Flood Hazard Area Control Act&quot;.</td>
<td>Chapter II, Part 1, Subpart b</td>
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<td>The antidegradation provisions of the surface water quality standards and the stormwater regulations applicable to C1 waters shall be applied to Highlands Open Waters.</td>
<td>Chapter II, Part 1, Subpart b</td>
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<tr>
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<td>A prohibition on impervious surfaces of greater than three percent of the land area of a lot existing on the date of enactment of this Act.</td>
<td>Chapter II, Part 1, Subpart c</td>
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<td>A prohibition on major development on steep slopes with a grade of 20% or greater.</td>
<td>Chapter II, Part 1, Subpart c</td>
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<td>A prohibition on development that disturbs upland forested areas.</td>
<td>Chapter II, Part 1, Subpart a</td>
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<td>Section 33 N.J.S.A.</td>
<td>NJDEP adoption of Highlands Preservation</td>
<td>Within 270 days after the date of enactment of the Act, the</td>
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<td>13:20-31</td>
<td>Area rules</td>
<td>NJDEP Commissioner shall immediately adopt the rules and regulations prepared by the department pursuant to Section 34 of the Act and any other rules and regulations necessary to establish the Highlands permitting review program.</td>
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<td>For activities eligible for the use of a general permit for any portion of an activity located within a freshwater wetland or freshwater wetland transition area located in the Preservation Area, establish criteria that are at least as protective as those provided in existing State freshwater wetland rules.</td>
<td>Chapter II, Part 1, Subpart b</td>
</tr>
<tr>
<td>Section 34</td>
<td>N.J.S.A. 13:20-32</td>
<td>A septic system density standard shall be established at a level to prevent the degradation of water quality, or to require the restoration of water quality, and to protect ecological uses from individual, secondary, and cumulative impacts, in consideration of deep aquifer recharge available for dilution.</td>
<td>Chapter II, Part 2</td>
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<td>A limitation or prohibition on the construction of new public water systems or the extension of existing public water systems to serve development in the Preservation Area, except in the case of a demonstrated need to protect public health and safety.</td>
<td>Chapter II, Part 2</td>
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<td></td>
<td>A prohibition on major Highlands development on steep slopes with a grade of 20% or greater and establishment of standards for slopes exhibiting a grade of between 10% and 20%.</td>
<td>Chapter II, Part 1, Subpart c</td>
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<td>The DEP shall establish a Highlands permitting review program to provide for the coordinated review of any</td>
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| Section 35  
N.J.S.A. 13:20-33 | DEP shall establish a Highlands permitting review program for major Highlands development in the Preservation Area | The Commissioner of NJDEP shall review filed applications for Highlands permitting reviews, including any information presented at public hearings or during a comment period, or submitted during the application review period. A Highlands permitting review approval may be issued only upon a finding that the proposed major Highlands development would meet the standards set forth in NJDEP’s Preservation Area rules. | |
| Section 36  
N.J.S.A. 13:20-34 | NJDEP shall review filed applications for Highlands permitting reviews | When reviewing applications for various Highlands permits, NJDEP must review applications in light of a set of narrative criteria, including, but not limited to, whether the proposed major Highlands development would: have a de minimis impact on water resources; cause minimal feasible interference with the natural functioning of animal, plant and other natural resources at the site; and result in minimum feasible alteration or impairment of aquatic ecosystems. | |
| Section 37  
N.J.S.A. 13:20-35 | Violations of rules, regulations of the Act | Whenever NJDEP finds that a person has violated any rule or regulation of the Highlands Act, the NJDEP Commissioner may issue an order requiring compliance or bring civil action against the offending party. | |
| Section 38  
N.J.S.A. 13:9B-5.1 | Major development that includes activities in a freshwater wetland area in the Preservation Area | Notwithstanding State freshwater wetlands regulations, major Highlands development that includes a regulated activity in a freshwater wetland or freshwater wetland transition area located in the Highlands | |
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<td>Section 39</td>
<td>NJDEP permit system for allocations or reallocations of Highlands Waters in the Preservation Area</td>
<td>NJDEP shall establish a permit system to provide for review of allocations or reallocations, for other than agricultural or horticultural purposes, of waters of the Highlands, to provide for the issuance of permits for diversions either individually or cumulatively of more than 50,000 gallons per day of waters of the Highlands Preservation Area.</td>
<td>Chapter II, Part 2</td>
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<td>NJ.S.A. 58:1A-5.1</td>
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<td>Section 40</td>
<td>NJDEP shall establish a septic density standard for the Preservation Area</td>
<td>NJDEP shall establish a septic system density standard at a level to prevent the degradation of water quality or to require the restoration of water quality to protect ecological uses from individual, secondary, and cumulative impacts, in consideration of deep aquifer recharge available for dilution.</td>
<td>Chapter II, Part 2, Subpart f</td>
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<td>NJ.S.A. 58:11-24.1</td>
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<tr>
<td>Section 41</td>
<td>NJDEP shall limit or prohibit the construction of new public water systems or the extension of existing public water systems in the Preservation Area</td>
<td>In the Preservation Area, NJDEP shall limit or prohibit the construction of new public water systems or the extension of existing public water systems, except in the case of a demonstrated need to protect public health and safety, and except to serve development in the Highlands Preservation Area that is exempt from the provisions.</td>
<td>Chapter II, Part 2</td>
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<td>NJ.S.A. 58:12A-4.1</td>
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<td>Section 42</td>
<td>Designated sewer service areas for which wastewater collection systems have not been installed on the date of enactment of the Act, are revoked</td>
<td>Designated sewer service areas for which wastewater collection systems have not been installed on the date of enactment of the Act, are revoked, and any associated treatment works approvals in the impacted areas shall expire on the date of enactment of the Act. Any designated sewer service area shall not be revoked and any associated</td>
<td>Chapter II, Part 2</td>
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<tr>
<td>NJ.S.A. 58:11A-7.1</td>
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<tr>
<td>Section 43</td>
<td>Zero net fill requirement</td>
<td>NJDEP shall establish a zero net fill requirement within any flood hazard area located in the Preservation Area.</td>
<td>Chapter II, Part 1, Subpart f</td>
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<td>N.J.S.A. 58:16A-60.1</td>
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<td>Chapter II, Part 3</td>
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<td>Section 44</td>
<td>Landowner applying to sell a development easement at a price that represents fair value of the development potential</td>
<td>This section amends the process for determining the easement value of development potential such that a county agriculture development board may look to the municipal average of the value of the development potential of property in a TDR sending zone in determining the value of the development easement.</td>
<td>Chapter II, Part 1, Subpart f</td>
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<td>N.J.S.A. 4:1C-31</td>
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<td>Chapter II, Part 3</td>
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<td>Section 45</td>
<td>Act does not prohibit municipally approved farmland programs</td>
<td>Nothing in the Act shall be construed to prohibit the creation of a municipally approved program or other farmland preservation program.</td>
<td>Chapter II, Part 3</td>
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<td>N.J.S.A. 4:1C-36</td>
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<td>Chapter II, Part 3</td>
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<td>Section 46</td>
<td>State Transfer of Development Rights Bank</td>
<td>This section amends the State TDR Bank Act to permit the bank to provide funds for a Highlands TDR Bank.</td>
<td>Chapter IV, Part 7</td>
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<td>N.J.S.A. 4:1C-52</td>
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<td>Chapter IV, Part 7</td>
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<td>Section 47</td>
<td>Appointing an officer or employee</td>
<td>The NJDEP Commissioner may appoint any officer or employee to the department necessary to carry out the provisions of the Act.</td>
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<td>N.J.S.A. 13:1B-15.143</td>
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<td>Section 48</td>
<td>NJDEP shall establish a natural resource inventory using the Geographic Information System</td>
<td>The NJDEP, in consultation with the Pinelands Commission and the Highlands Council, shall establish a natural resources inventory, using the Geographic Information System, for the purpose of encouraging ecologically based tourism and recreation in New Jersey. This inventory shall contain information on New Jersey's</td>
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<td>Section 49 N.J.S.A. 13:1D-58</td>
<td>Conveyances of lands to the federal government or any agency for recreation and conservation purposes</td>
<td>The provisions of P.L.1993 shall not apply in the case of conveyances by the State or the NJDEP involving an exchange of lands within the Pinelands Area, or within the Hackensack Meadowlands District or within the Highlands Region to the federal government or any agency provided the lands to be conveyed are used for recreation or conservation purposes and it has been determined that the proposed recreation and conservation purposes for the lands do not significantly alter the ecological and environmental value of the lands being exchanged.</td>
<td>Chapter VI, Part 2</td>
</tr>
<tr>
<td>Section 50 N.J.S.A. 13:1M-18</td>
<td>Act does not supersede municipal adoption of any ordinance regulating or prohibiting the exploration of oil and natural gas or uranium</td>
<td>Nothing in the Highlands Act shall be construed to supersede or prohibit the adoption, by the governing body of any county or municipality, of any ordinance regulating or prohibiting the exploration beyond the reconnaissance phase, drilling for, and the extraction of oil and natural gas or uranium. NJDEP shall not approve any ordinance or regulation submitted pursuant this section which governs activities within the Highlands Preservation Area, unless the Council has approved the ordinance or regulation. The department shall not disapprove an ordinance or regulation which has been certified by the Council as consistent with the requirements of the Highlands Regional Master Plan.</td>
<td>Chapter VI, Part 2</td>
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<td>Section 51 N.J.S.A. 13:8C-25</td>
<td>Garden State Preservation Trust biennial report</td>
<td>Within one year after the date of enactment of this Act, and biennially thereafter until and including 2008, the Garden</td>
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<td>State Preservation Trust, after consultation with the NJDEP, the State Agriculture Development Committee, the New Jersey Historic Trust, the Pinelands Commission, the Highlands Council, and the Office of State Planning shall prepare and submit to the Governor and the Legislature a written progress report.</td>
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<td>Section 52</td>
<td>N.J.S.A. 13:8C-25.1</td>
<td>The NJDEP, in consultation with the Office of State Planning, the Pinelands Commission, and the Highlands Council, shall prepare and submit to the Governor and the Legislature an Open Space Master Plan, which shall indicate those areas of the State where the acquisition and development of lands by the State for recreation and conservation purposes is planned or is most likely to occur, and those areas of the State where there is a need to protect water resources.</td>
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<td>Section 53</td>
<td>N.J.S.A. 13:8C-26</td>
<td>Moneys appropriated from the Garden State Green Acres Preservation Trust Fund to NJDEP shall be used by the department to: 1) pay the cost of acquisition and development of lands by the State for recreation and conservation purposes; 2) provide grants and loans to assist local government units to pay the cost of acquisition and development of lands for recreation and conservation purposes; and 3) provide grants to assist qualifying tax exempt nonprofit organizations to pay the cost of acquisition and development of lands for recreation and conservation purposes.</td>
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| Section 54  
N.J.S.A.  
13:8C-38 | Expenditure and allocation of constitutionally dedicated moneys for farmland preservation purposes | All acquisitions or grants made pursuant to Section 37 of the Act shall be made with respect to farmland devoted to farmland preservation under programs established by law. This section states the provisions for expenditure and allocation of constitutionally dedicated moneys for farmland preservation purposes, including required appraisal methods. | Chapter II, Part 3  
Chapter VI, Part 3  
Chapter V, Part 3 |
| Section 55  
N.J.S.A.  
13:8C-13 | Delaware and Raritan Canal Park Master Plan – consultation with Highlands Council on any provision of the park master plan that may impact the Highlands Region | The Delaware and Raritan Canal Commission shall consult with the Highlands Council on any provision of the Delaware and Raritan Canal Park master plan that may impact upon or otherwise affect the Highlands Region or the Highlands Regional Master Plan, and any such provision shall be consistent with the Highlands Regional Master Plan adopted by the Council pursuant to the Highlands Act. | Chapter II, Part 1, Subpart b  
Chapter VI, Part 1, Subpart c |
| Section 56  
N.J.S.A.  
13:8C-14 | Review zone for the Delaware and Raritan Canal Park and consultation with Highlands Council on any provision of the park master plan that may impact the Highlands Region | The Delaware and Raritan Canal Commission shall determine the extent and limits of the review zone to be designated for the Delaware and Raritan Canal Park. To the extent that any action the commission takes pursuant to this section may impact upon or otherwise affect the Highlands Region, the commission shall consult with the Highlands Council. | Chapter II, Part 1, Subpart b |
| Section 57  
N.J.S.A.  
27:5-9.1 | Licensed and permitted billboard and outdoor advertising subject to Highlands Council review | Any licensed and permitted billboard or outdoor advertising sign proposed to be erected on or above any State lands shall be subject to the provisions of the Highlands Act, any rules and regulations adopted pursuant thereto, and the Highlands Regional Master Plan adopted by the Highlands | Chapter VI, Part 1 |
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| Section 58 | Palisades Interstate Park Commission establishing lands to be preserved as parkland | The Palisades Interstate Park Commission, in consultation with the NJDEP and the Highlands Council, shall, from time to time, select and locate lands lying within the Highlands areas of Bergen, Hunterdon, Morris, Passaic, Somerset or Warren counties as necessary to be reserved for the purpose of establishing a park. | Chapter II, Part 1, Subpart b  
Chapter VI, Part 1, Subpart c |
| Section 59 | Greenwood Lake Commission to consult with Highlands Council in carrying out its duties | With respect to Greenwood Lake, the Greenwood Lake commission shall consult with the Highlands Council in carrying out its duties. Any action taken by the commission that may impact the Highlands Preservation Area shall be consistent with the Highlands Regional Master Plan. | Chapter II, Part 1, Subpart b |
| Section 60 | Municipal master plans shall include a specific policy statement indicating the relationship of proposed development to the Highlands Regional Master Plan | In the case of a municipality situated within the Highlands Region, the municipality’s master plan shall include a specific policy statement indicating the relationship of any proposed development, as defined in the master plan, to the Highlands Regional Master Plan. | Chapter VI, Part 1 |
| Section 61 | Highlands Protection Fund | This section stipulates the monies generated from the State realty transfer tax that shall be credited to the Highlands Protection Fund on an annual basis. | Chapter II, Part 8  
Chapter IV, Part 8  
Chapter V, Part 8 |
| Section 62 | Highlands Protection Fund | This section dictates provisions regarding monies that shall be credited to the Highlands Protection Fund. | Chapter II, Part 8  
Chapter IV, Part 8  
Chapter V, Part 8 |
<p>| Section 63 | Need for State Development and Redevelopment Plan | This section describes the need for a State Development and Redevelopment Plan. | |</p>
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<td>196</td>
<td>Section 64 N.J.S.A. 52:18A-199 Goals and duties of State Planning Commission</td>
<td>This section outlines the goals and duties of the State planning Commission.</td>
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<td>Section 65 N.J.S.A. 52:18A-200 Goals for State Development and Redevelopment Plan</td>
<td>This section outlines the objectives of the State Development and Redevelopment Plan, including considering input from State, regional, county and municipal entities concerning their land use, environmental, capital and economic development plans.</td>
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<td>Section 66 N.J.S.A. 52:18A-201 Goals and duties of the Office of State Planning</td>
<td>This section outlines the goals and duties of the Office of State Planning.</td>
<td>Chapter VI, Part 1</td>
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<td>Section 67 N.J.S.A. 2:18A-202 State Development and Redevelopment Plan – State Planning Commission to coordinate with Highlands Council</td>
<td>In preparing, maintaining and revising the State Development and Redevelopment Plan, the State Planning Commission shall solicit and give due consideration to the plans, comments and advice of the Highlands Council.</td>
<td>Chapter VI, Part 3</td>
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<td>Section 68 N.J.S.A. 52:18A-202.2 Office of State Planning and Office of Economic Policy</td>
<td>This section discusses the coordination necessary between the Office of State Planning and the Office of Economic Policy, and necessary coordination with regional entities.</td>
<td>Chapter VI, Part 3</td>
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<td>Section 69 N.J.S.A. 52:18A-203 Municipal and county master plans approved by Highlands Council shall be deemed the equivalent of having those plans endorsed by the State Planning Commission</td>
<td>Any municipality or county or portion thereof located in the Highlands Preservation Area shall be exempt from the State Development and Redevelopment Plan endorsement process. Upon the State Planning Commission endorsing the Regional Master Plan adopted by the Highlands Council, any municipal master plan and development regulations or county master plan and associated regulations that have been approved by the</td>
<td>Chapter VI, Part 1</td>
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| Section 70  
N.J.S.A.  
52:18A-204 | State Planning Commission entitled to solicit assistance | The State Planning Commission shall be entitled to call to its assistance any personnel of any State agency, regional entity, or county, municipality or political subdivision thereof as it may require in order to perform its duties. | Chapter VI, Part 1, Subpart c |
| Section 71  
N.J.S.A.  
52:18A-205 | State Planning Commission need to access data/studies from other agencies | Each State agency, regional entity, or county, municipality or political subdivision shall make available to the commission any studies, surveys, plans, data and other materials. | Chapter VI, Part 1, Subpart c |
| Section 72  
N.J.S.A.  
52:18A-206 | State Planning Commission shall rely on the adopted plans of regional entities | The State Planning Commission shall rely on the adopted plans and regulations of regional entities (including the Highlands Council) in developing the State Development and Redevelopment Plan. | Chapter VI, Part 3 |
| Section 73  
N.J.S.A.  
58:1A-13 | New Jersey Statewide Water Supply Plan – NJDEP to consult with the Highlands Council | The NJDEP shall prepare and adopt the New Jersey Statewide Water Supply Plan. Prior to the adoption of any revision to the New Jersey Statewide Water Supply Plan, NJDEP shall consult with the Highlands Council concerning the possible effects and impact of the plan upon the Highlands Regional Master Plan. | Chapter VI, Part 1, Subpart c |
| Section 74  
N.J.S.A.  
58:1A-15.1 | NJDEP actions pursuant to the provisions of P.L.1981, c. 262 (C.58:1A-1 et al.) or P.L.1993, c. 202 (C.58:1A-7.3 et al.) must be consistent with Act. | No action taken by NJDEP pursuant to the provisions of P.L.1981, c. 262 (C.58:1A-1 et al.) or P.L.1993, c. 202 (C.58:1A-7.3 et al.) shall be inconsistent with the provisions of the Highlands Act or the Highlands Regional Master Plan. | Chapter VI, Part 1, Subpart c |
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<td>Section 75 N.J.S.A. 58:1B-6</td>
<td>New Jersey Water Supply Authority shall consult with the Highlands Council</td>
<td>The New Jersey Water Supply Authority shall consult with the Highlands Council prior to final action on any project or undertaking in the Highlands Region.</td>
<td>Chapter VI, Part 1, Subpart c</td>
</tr>
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<td>Section 76 N.J.S.A. 58:4B-7</td>
<td>Lake Hopatcong Commission shall consult with the Highlands Council</td>
<td>The Lake Hopatcong Commission shall consult with the Highlands Council in developing stormwater and nonpoint source pollution management plans. Any plan developed that may impact upon or otherwise affect the Highlands Preservation Area shall be consistent with the Highlands Regional Master Plan.</td>
<td>Chapter VI, Part 1, Subpart c</td>
</tr>
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<td>Section 77 N.J.S.A. 58:4B-9</td>
<td>Lake Hopatcong Commission – municipal master plan amendments and consistency with the Highlands Plan</td>
<td>The Lake Hopatcong Commission shall consider the consistency of any amendment or revision to a municipality’s master plan or zoning with the Highlands Regional Master Plan. If it may impact upon or otherwise affect the Highlands Preservation Area, the Commission shall consult with the Highlands Council.</td>
<td>Chapter VI, Part 1, Subpart c</td>
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<td>Section 78 N.J.S.A. 58:5-12</td>
<td>North Jersey District Water Supply Commission to consult with Highlands Council when obtaining any water from Highlands Region</td>
<td>If the plans to be formulated pursuant to this section involve obtaining water from the Highlands Region, the North Jersey District Water Supply Commission shall consult with the Highlands Council prior to moving forward with any plans or entering into any contracts.</td>
<td>Chapter VI, Part 1, Subpart c</td>
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<td>Section 79 N.J.S.A. 58:10A-7.2</td>
<td>NJDEP permit applications to discharge groundwater to surface water involving a groundwater remedial action in the Preservation Area</td>
<td>In the Preservation Area, an application for a permit issued by NJDEP for the discharge of groundwater to surface water involving a groundwater remedial action (necessitated by a discharge from an underground storage tank containing petroleum products or a groundwater remedial action involving petroleum)</td>
<td>Chapter VI, Part 1, Subpart c</td>
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<td>Section 80 &lt;br&gt;N.J.S.A. &lt;br&gt;58:10B-2</td>
<td>Remedial actions within the Preservation Area</td>
<td>All remediation standards and remedial actions that involve real property located in the Highlands Preservation Area shall be consistent with the provisions of the Highlands Act.</td>
<td>Chapter IV, Part 6, Subpart e</td>
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<td>Section 81 &lt;br&gt;N.J.S.A. &lt;br&gt;58:10B-12</td>
<td>Remedial actions within the Preservation Area</td>
<td>Same summary as that of Section 80 - all remediation standards and remedial actions that involve real property located in the Highlands Preservation Area shall be consistent with the provisions of the Highlands Act.</td>
<td>Chapter IV, Part 6, Subpart e</td>
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<td>Section 82 &lt;br&gt;N.J.S.A. &lt;br&gt;58:29-8</td>
<td>Monies appropriated from Highlands Protection Fund to municipalities</td>
<td>Monies shall be appropriated from the &quot;Highlands Protection Fund&quot; each year to each municipality which has lands subject to the moratorium on the conveyance of watershed lands. An amount of $47 per acre for such lands shall be appropriated.</td>
<td>Chapter II, Part 8&lt;br&gt;Chapter VI, Part 8&lt;br&gt;Chapter V, Part 8</td>
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<td>Section 83</td>
<td>Effective date of the Highlands Act</td>
<td>The Highlands Act is effective August 10, 2004.</td>
<td>Chapter 1, Part 3</td>
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