

Natural Lands Baseline Topic Report

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1 Introduction



Figure 1.1 “George Inness: Delaware Water Gap”(1861) Shows the Hudson River School’s nineteenth century depiction of a New Jersey natural landmark. (Inness)

As part of the Together North Jersey (TNJ) Regional Plan for Sustainable Development (RPSD), a series of baseline reports seeks to “characterize existing conditions, regional needs, patterns, trends, challenges and opportunities” with respect to various issues in the 13-county northern New Jersey region.

This report focuses on natural lands, especially their role in supporting sustainable development and a sustainable region, and on the protection and preservation of these natural assets. For the purpose of this report, the term “natural lands” refers to land that is either not developed or not significantly disturbed: farmland, forestland, wetlands and floodplains, meadows, and parkland. Natural lands provide plant and animal habitat, protect critical water resources, are the land base for agriculture and offer opportunities for recreation. Natural corridors, known as greenways, serve as connectors between natural lands. These greenways and open spaces comprise New Jersey’s system of green infrastructure: a network of protected, connected natural,

agricultural and recreational lands that maintains ecological values and functions, public health and quality of life.¹

This report does not intend to focus on a comprehensive, scientific analysis of the state of New Jersey’s natural lands. While the natural lands baseline covers the farmland that supports agriculture, the *Comprehensive Economic Development Strategy* will address the business of agriculture itself. This baseline addresses connectors such as greenways and recreational trail systems, but the *Transportation Baseline* report covers bike paths and sidewalks. This report addresses water resource lands and park access, but the *Water Resources Baseline* and *Land Use and Urban Design Baseline* respectively focus critically on the science of water resources and the physical design of parks.

1.1 Organization of the Report

This report is presented in four sections. The first section defines the topic, describes the report’s organization and provides a summary of key findings.

The second section describes existing conditions and key trends with respect to natural lands in the region, providing a general description of the types of services natural lands provide, such as for habitat, water resources, recreation, and agriculture. The region’s most significant natural areas are described qualitatively. The report provides a snapshot of the region’s land cover, including changes over time. The report illustrates the location of permanently preserved land in the region, including parks, greenways, urban open space and preserved farmland, examining the amount of preserved land today and recent trends in preservation.

The third section focuses on the policy, planning and implementation contexts that surround natural lands and their protection and preservation. Broken down into three main approaches – strategic planning and acquisition, land use planning, and regulation – this section describes the three approaches and how they can be used in a coordinated and complementary fashion, highlighting challenges and opportunities to natural lands protection.

The final section lists desirable outcomes that relate to natural lands, originally proposed by Together North Jersey from input by the TNJ project team, Standing Committee on Livability and Environment, and the TNJ public outreach sessions. The report then proposes indicators that will help to gauge the degree of outcomes.

I would like to thank Chris Sturm, senior director of state policy at New Jersey Future; Susan Payne, Tim Brill and Monique Purcell in the New Jersey Department of Agriculture; and John Gray, Rich Boornazian, Robin Madden, Steve Jandoli, Dave Jenkins, Dan Saunders, Bob Cartica and Lynn Fleming from the New Jersey Department of Environmental Protection for contributing information and providing necessary guidance.

¹ There is no universal definition for green infrastructure. Over the years, the term has been defined differently by several authors. According to Benedict and McMahon (2002), “green infrastructure is our nation’s natural life support system – an interconnected network of waterways, wetlands, woodlands, wildlife habitats and other natural areas; greenways, parks and other conservation lands; working farms, ranches and forests; and wilderness and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources and contribute to the health and quality of life for America’s communities and people.”

1.2 Key Findings

The following list represents the key takeaways from this baseline report. Source information related to quantitative data may be found in subsequent chapters and the appendix.

- **Presence of Natural Lands:** Urban land use dominates the North Jersey landscape and covers 37 percent of the region, followed by forests (33 percent), wetlands (14 percent), agriculture (10 percent), water (6 percent) and barren lands (1 percent). Land use patterns vary across the region. Urban land use is clustered in the northeast, while forest and agriculture still have a dominant presence in the western rural counties. Union County is the most urbanized at 83 percent, while Sussex County is the least urbanized (16 percent). Hunterdon County has the highest percentage of agricultural land, Sussex has the highest forest percentage, and Monmouth and Ocean counties have the highest percentages of wetlands.
- **Loss of Natural Lands:** Between 1986 and 2007, urbanization converted nearly 25,000 acres of farms and forests, with the biggest changes occurring in Hunterdon, Ocean, Sussex and Warren counties.
- **Natural Lands Diversity:** Natural lands maintain critical ecosystems and cost-saving green infrastructure, and provide for farmland and recreation opportunities. North Jersey's natural lands include forests (maple and oak mixes to the north, pine to the south), lakes (natural and artificial), farms, streams, floodplains, wetlands, grasslands, riparian areas and coastal lands.
- **Farmland by the Numbers:** Between 2002 and 2007 available farmland across the state decreased by 72,000 acres to 733,450 acres, while the number of farms increased by 400. In North Jersey, farmland decreased by almost 35,000 acres to 366,141 acres, while the number of farms increased by 343 to a total of 6,127.
- **Preserved Farmland and Open Space Combined Cover Nearly 30 percent of the region.** Federal, state, county and municipal open space programs have preserved or protected nearly 700,000 acres for parks, open space, and other lands in North Jersey, representing nearly 25 percent of the region. The New Jersey Farmland Preservation Program has preserved over 200,000 acres statewide, with a goal to preserve an additional 400,000 acres to ensure the continued viability of agriculture. In North Jersey alone, the program has preserved over 80,000 acres, representing 3 percent of land area, or approximately 20 percent of farm acres.
- **Funding Sources:** Funding for farmland preservation and open space comes from federal, state, local, and private sources. Federal funding comes largely from the United States Department of the Interior (Park Service, Fish and Wildlife Service) and the Department of Agriculture (Natural Resources Conservation Service), and indirectly from the Department of Defense (military holdings throughout New Jersey). From 1961 through 2011, New Jersey's Green Acres program was responsible for the

preservation of over 650,000 acres across New Jersey. The Farmland Preservation Program, started in 1983, has preserved over 200,000 acres.

- **Recent Funding:** From 2000 to 2013, New Jersey appropriated an average of \$214 million annually towards open space and farmland preservation. Since the last bond referendum in 2009, state funding for open space and farmland preservation has been essentially depleted. In light of recent extreme weather events, including Superstorm Sandy, \$305 million of federal funds has been dedicated through the state's Blue Acres program to purchasing properties that have been repeatedly affected. All 21 New Jersey counties have dedicated tax programs for open space preservation, and out of New Jersey's 565 municipalities, 232 have preservation programs in place. Out of these preservation programs, 75 percent are located in North Jersey. In 2012, North Jersey counties raised \$144 million for the purpose of open space preservation. In total, New Jersey counties raised \$201 million.
- **Open Space and Farmland Preservation Priorities:** Approximately 38 percent of New Jersey is neither preserved nor developed. New Jersey's Green Acres program has a goal of preserving an additional 650,000 of these remaining acres over the next 30 years, and the Farmland Preservation Program hopes to preserve 400,000 additional acres.
- **State Preservation Strategies:** Land preservation priorities vary by program. Acquisition priorities for Green Acres come from several sources within the New Jersey Department of Environmental Protection (including Fish and Wildlife and Parks and Forestry), as well as a focus on water resources.² The Department of Agriculture's State Agriculture Development Committee bases its priorities on the aggregation of comprehensive farmland preservation plans prepared by 18 counties and 46 municipalities. Currently, these plans are seeking to preserve approximately 216,000 acres over a 10-year period at a total cost of \$2.5 billion. State agencies have started to explore ways to achieve mutual goals through land preservation, such as through the DEP Connectivity Initiative, which includes partnerships with state and federal transportation agencies. In the absence of an official integrated state map of farmland and open space preservation priority areas, nonprofit programs such as Garden State Greenways outline what they deem the most important areas to preserve.
- **County and Municipal Preservation Strategies:** County and municipal open space strategy is guided by jurisdictional Open Space and Recreation plans (OSRPs). These plans vary in quality. While the state encourages consideration of the Garden State Greenways in developing strategy, the greenways program does not conduct a qualitative review of OSRPs. Meanwhile, those plans are not necessarily integrated with county and municipal farmland preservation plans. This patchwork of interests has sometimes helped to strengthen open space planning, but has also worked against the development of a clear vision for natural lands and green infrastructure investment.

² For a full description, see the State Comprehensive Outdoor Recreation Plan, which is currently being updated.

- **Regulatory Protections:** Existing federal and state environmental regulations help to protect critical natural areas, including surface waters, floodplains, wetlands and coastal lands.
- **State Planning:** New Jersey's 2001 State Development and Redevelopment Plan identifies areas where the primary emphasis should be on agriculture and natural resource protection. While the plan is voluntary, it has had some impact on state programs and local zoning. The proposed update, the State Strategic Plan, promotes the designation of Priority Preservation Investment Areas, based largely on state and local open space and farmland plans. Somerset County has used the approach to create a comprehensive map of priority areas for both growth and preservation.
- **Regional Planning:** Land use decisions for nearly one third of New Jersey's land area are governed by three regional planning bodies: the New Jersey Highlands Council, The New Jersey Pinelands Commission and the New Jersey Meadowlands Commission. The Pinelands Commission has established a national track record in protecting natural resources through a combination of land use planning, regulation and acquisition. Using a Transfer of Development Rights (TDR) program, the Pinelands Commission has preserved over 50,000 acres of land to protect farms, open space and freshwater supplies.
- **Local and Use Planning Approaches to Natural Lands Protection:** Under the New Jersey Municipal Land Use Law, New Jersey has granted most land use controls to its municipalities. As a result, most land use planning decisions are made at the local level, while being guided by state, regional and county plans. New Jersey has equipped municipalities and regional planning bodies with different planning tools to preserve and protect natural lands, including a Transfer of Development Rights (TDR) program, clustering and traditional large-lot zoning. When used appropriately and in concert with acquisition and state regulation, these tools can help to further municipal goals for growth and open space preservation.

2 Existing Conditions and Trends of Natural Lands in North Jersey



Figure 2.1 Delaware River from the City of Lambertville, New Jersey (Hunterdon County). (Staff Photo, No Date)

Natural lands define the Northern New Jersey Landscape. The Delaware River, the longest free-flowing river in the United States acts as a natural boundary between New Jersey and its neighbors to the west, Pennsylvania and Delaware. Along this river corridor include the federally protected Delaware Water Gap National Recreation Area, which nearly spans from the northwestern corner of New Jersey along the Kittatinny Mountain ridge to the Delaware Water Gap in Warren County. To the northeast, the Hudson River and Arthur Kill Strait (Staten Island Sound) separate New Jersey from New York City. Within this urban region, the restored wetlands and marshes of the New Jersey Meadowlands in Bergen and Hudson Counties offer a historic look of the Hackensack River Valley. Southeast of New York City, the Atlantic Ocean borders the state with over two hundred miles of shoreline. Along this stretch of coastline, a series of barrier beaches protect interior bays, wetlands and other unique habitats. Stretching from southwest to the northeastern part of the region, the Highlands serve as New Jersey's section of the Appalachian Mountains, crossing Bergen, Hunterdon, Morris, Passaic, Somerset, Sussex and Warren Counties. The forests, swamps and bogs of the New Jersey Pinelands, the largest contiguous natural area in the state and the Mid-Atlantic United States, is located in the southern end of the Together North Jersey planning region in Ocean County, but also spans Atlantic, Burlington, Camden, Cape May, Cumberland and Gloucester Counties. Interspersed between these natural features include parks, farms, open space, natural and manmade lakes, forests, swamps and grasslands, all varying in scope, scale and ownership. The region's most extensive farming regions include the western-most parts of Monmouth and Middlesex and Ocean counties, and

the northwest counties of Hunterdon, Warren and Sussex counties plus the western-most parts of Morris and Somerset counties.

Despite the negative pop culture references to New Jersey's suburban and industrialized landscapes, the Together North Jersey planning region is home to many natural sites that stand as a dramatic counterargument.

2.1 Regional and County Land Use



Figure 2.2 New York City Skyline from Sandy Hook Beach, Gateway National Recreation Area

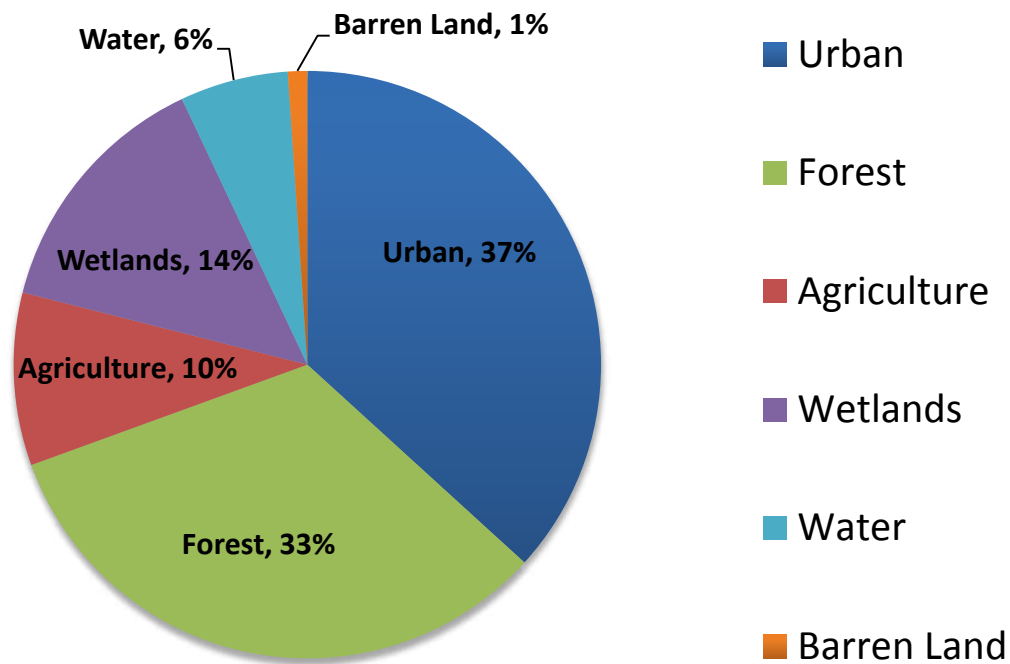
New Jersey's land use practices historically followed traditional land development patterns: larger-scale cities and towns came in to being where the landscape could support the population and the economy. This concentrated development around the port cities in proximity to New York and Philadelphia, or in areas that were able to take advantage of other natural resources to support development, such as the Passaic River in Paterson. Subsequent development of canals and railway infrastructure encouraged development around canal stops and transit stations. The twentieth century advent of the automobile, construction of the interstate highway system and federally supported home loans encouraged growth beyond these areas, resulting in the development of subdivisions in areas that were previously undeveloped. High-speed transportation of goods reduced demand for local farm products, and when combined with the continuous demand for developable land and numerous other factors, many farmers were unable to make the justification to continue farming and sold their land to speculators and developers. Some areas have seen less development than others, such as the Pinelands to the south and some of the mountainous areas in the north.

Figure 2.3 below describes the observed land use across the North Jersey region in 2007 (Hasse & Lathrop, 2010).³ Roughly one third of this region is classified as urban (comprising the largest land use at 37 percent),

³ Determination of land use in New Jersey is based on work by the State's Department of Environmental Protection (DEP) through digital analysis of aerial photography. Different land uses can be extrapolated based upon the different color signatures of each pixel in the photo, and therefore can provide a large-scale estimate of land use. While this analysis is useful at explaining land use and land cover, information regarding ownership, planned use, zoning and other factors must come from other sources. For example, an area classified as "forest" may be used for purposes of commercial forestry, which is sometimes viewed as an agricultural practice.

another third as forest, and the remaining third is divided between wetlands, agriculture, water, and barren land. When land use is broken down between the thirteen counties in the region, the figures provide more depth into the local character of development. Figure 2.4 shows the hubs traditionally associated with urban development in northeastern New Jersey--Bergen, Essex, Hudson, Middlesex and Union Counties—are still predominantly characterized by urban land use, with smaller proportions of agriculture, water, wetlands, forests and barren lands. Conversely, counties located farther west show greater concentrations of agriculture, forests, water, and wetlands.⁴

Figure 2.3 Land Use in the 13 County North Jersey Region



NJDEP Land Use/Land Cover Level I Data Analysis 2002-2007, (July 19, 2010)

⁴ The values from this analysis were derived from 2007 aerial imagery. While ongoing development from 2007 to the present has certainly altered these values over the past six years, new imagery would likely show a reduced increase in the rate of development as a result of the economic recession when compared to earlier years. Present imagery may also show differences to open lands as a result of Hurricane Irene/Tropical Storm Lee in 2011 and Hurricane Sandy in 2012.

2.1.1 Land Use By Type

Figure 2.4 County Land Use By Type, 2007

County	Urban	Agriculture	Forest	Water	Wetlands	Barren Land
Bergen	110,859	467	25,581	5,639	9,289	1,644
Essex	63,667	58	9,621	2,693	6,399	585
Hudson	23,889	0	1,844	4,759	1,410	1,082
Hunterdon	68,701	79,737	99,380	7,056	23,936	974
Middlesex	114,710	11,930	25,637	6,549	40,384	4,013
Monmouth	143,684	35,535	50,765	11,865	65,139	3,852
Morris	119,137	12,733	119,132	11,032	43,108	2,710
Ocean	109,146	5,835	176,304	85,844	100,129	7,818
Passaic	46,913	443	60,634	9,181	8,852	896
Somerset	87,138	28,788	48,540	2,592	25,749	2,315
Sussex	53,330	37,067	190,063	13,188	46,734	2,097
Union	55,774	124	6,242	1,895	2,956	449
Warren	39,823	55,325	108,028	5,725	21,464	1,525
Total North Jersey	1,036,771	268,042	921,771	168,018	395,549	29,960
New Jersey	1,532,809	566,044	1,526,358	810,095	996,984	51,678

NJDEP Land Use/Land Cover Level I Data Analysis 2002-2007, (July 19, 2010)

2.1.2 Spotlight on Agriculture: Farming in the Garden State

Despite increased urbanization of farm and agriculture lands, farming has continued to play a major role in defining land use patterns in New Jersey.⁵ While farmland has continued to drop in acreage across the state, the number of farms has increased, indicating a reduction in farm size (United States Department of Agriculture, 2007). Master Plans and Open Space Plans in many rural and suburban municipalities stress the need to maintain and protect a rural quality of life and landscape. The rationale to protect farms and open space will vary by town and by those involved in the planning process.

Figure 2.5 provides a snapshot of the farms in North Jersey as of the 2007 Agriculture Census. Roughly half of the land in farms in New Jersey is located in North Jersey. While the concentration of farms exists in the western parts of the state, every county except for Hudson County has over 100 acres of land dedicated to farm production. In 2011, Warren County was ranked first in the state for production of feed corn and alfalfa hay, as well as for the number of milk cows. Other counties in the North Jersey region also ranked in the top five of selected items include Hunterdon, Monmouth, Ocean and Sussex Counties (New Jersey Department of Agriculture, 2012). Besides grain and livestock production, New Jersey agriculture produces well over one hundred different products of Christmas trees, field crops, flowers, trees, fruits, herbs, specialty products, vegetables, as well as a diverse aquaculture industry (See Appendix A). (New Jersey Department of Agriculture, 2012) In addition to traditional agriculture, the increased popularity of local foods, community-supported

⁵ For more information on agriculture as an industry, please refer to the *Together North Jersey Comprehensive Economic Development Strategy*.

agriculture, value-added agriculture and agritainment have helped to allow New Jersey agriculture to remain viable despite rising property values and development pressures.

Figure 2.5 Farmland in the Study Area (2007)

County	Total Farms	Land In Farms	Average Size of Farm
Bergen	89	1,177	13
Essex	13	184	14
Hudson	-	-	-
Hunterdon	1,623	100,027	62
Middlesex	236	18,717	79
Monmouth	932	44,130	47
Morris	422	17,028	40
Ocean	255	9,833	39
Passaic	103	1,981	19
Somerset	446	32,721	74
Sussex	1,060	65,242	62
Union	15	126	8
Warren	933	74,975	80
Total North Jersey	6,127	366,141	60
New Jersey	10,327	733,450	71

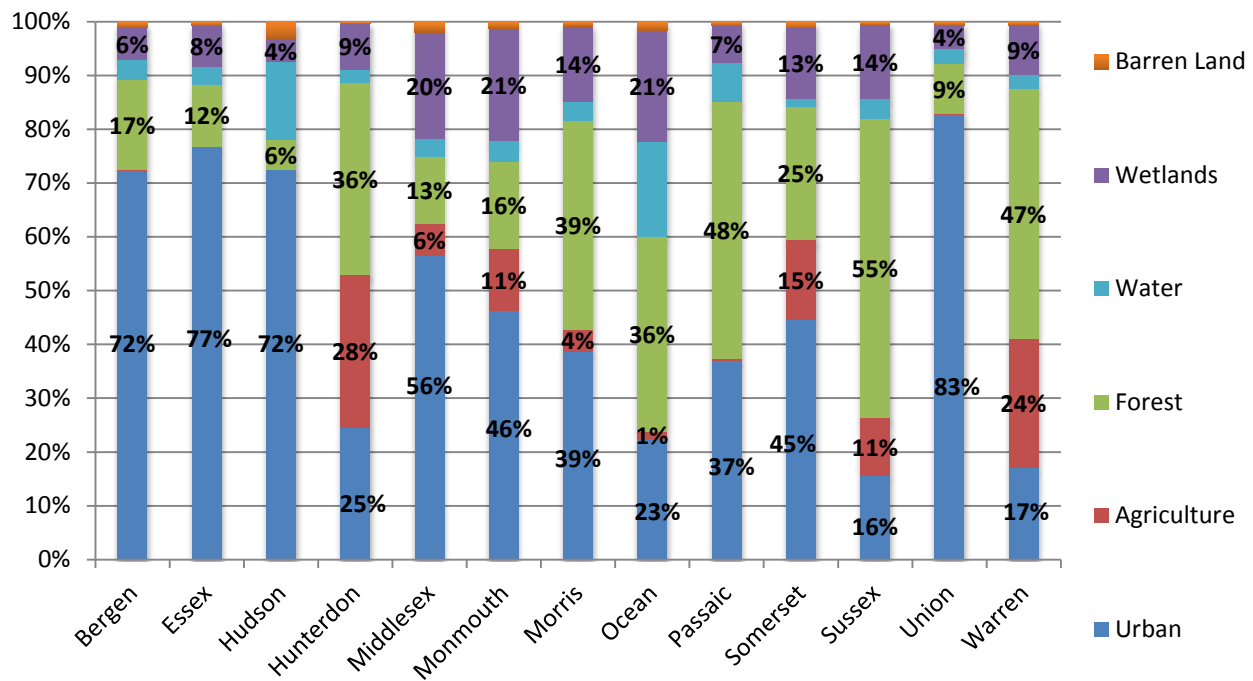
USDA Census of Agriculture (2007)

2.1.3 Development Trends over Time

Development in the North Jersey region has reflected many of the post-war suburbanization patterns experienced throughout the country, with an exodus of people leaving the center cities and older inner-ring suburbs for rural exurbs. Figures 2.6 and 2.7 show this transition of rapid farmland loss over the twenty year period from 1986-2007. Counties with older suburbs and larger cities, such as Bergen, Essex, Hudson, Middlesex and Union, did not experience as dramatic of a land use shift when compared to rural counties. Hunterdon, Morris, Ocean, Somerset, Sussex and Warren County each experienced much larger land use shifts to urbanized development at the expense of forest and agriculture use. Figure 2.8 quantifies the overall urbanization change over this period. While the eastern counties, Bergen, Essex, Hudson, Passaic and Union continued to urbanize, this change fell under ten percent. On the other hand, Hunterdon, Sussex and Warren experienced a 50% increase in urban land cover.

Increased urbanization has continued to erode agriculture and forest uses (water, wetlands, and barren land have experienced very little change), however more pronounced change has taken place in the North Jersey counties. In 1986, land use analysis estimates that North Jersey had over 400,000 acres of agricultural lands, while South Jersey had nearly 340,000. By 2007, these numbers stood at approximately 270,000 and 300,000 acres, respectively. With regard to urbanization, North Jersey has continued to stay ahead of South Jersey, by nearly a difference of 2 to 1.

Figure 2.6 County Land Use (2007)



NJDEP Land Use/Land Cover Level I Data Analysis 2002-2007, (July 19, 2010)

Figure 2.7 County Land Use (1986)

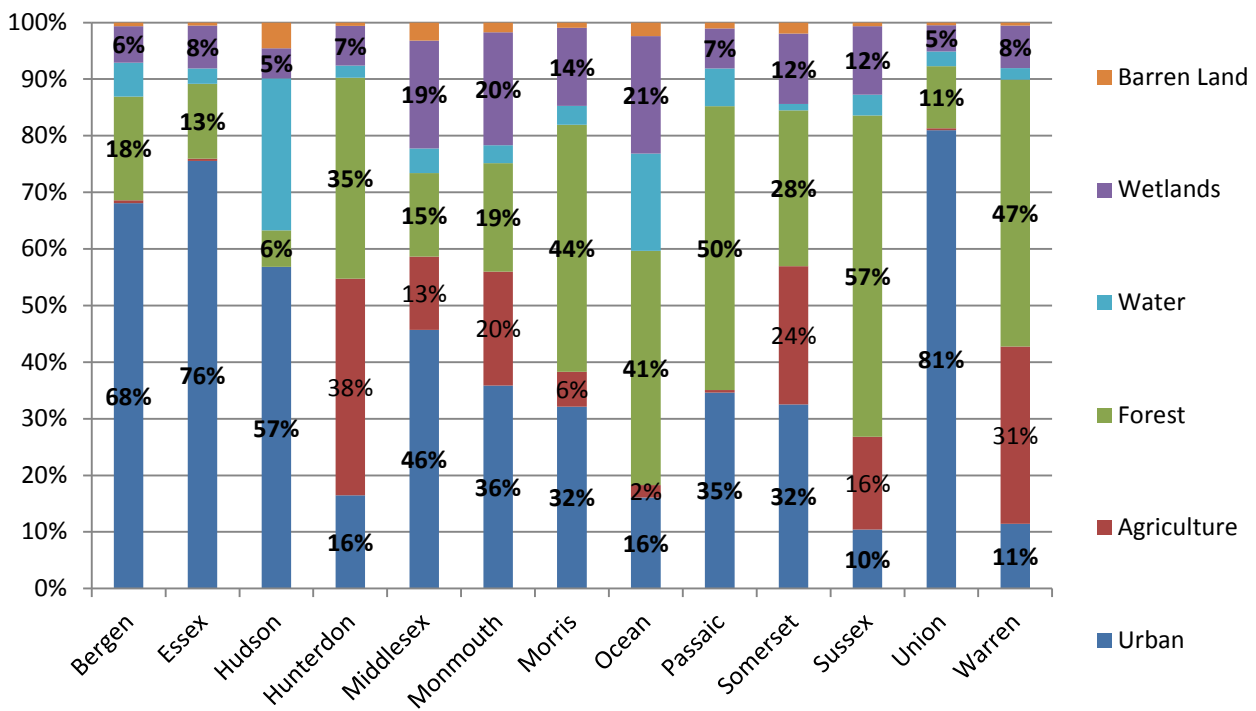


Figure 2.8 Change in Urban Cover 1986-2007

County	Total Acres	1986 Urbanized	2007 Urbanized	1986-2007 Acre Change	Percent Change
Bergen	153,046	107,394	110,854	3,460	3.2%
Essex	81,737	62,310	63,683	1,373	2.2%
Hudson	25,260	22,602	23,886	1,284	5.7%
Hunterdon	278,923	45,804	68,697	22,893	50.0%
Middlesex	200,513	93,528	114,717	21,189	22.7%
Monmouth	303,849	109,004	143,669	34,665	31.8%
Morris	307,398	97,832	119,142	21,310	21.8%
Ocean	324,612	77,476	109,145	31,669	40.9%
Passaic	125,908	43,508	46,919	3,410	7.8%
Somerset	195,094	62,656	87,148	24,492	39.1%
Sussex	342,396	35,427	53,335	17,908	50.6%
Union	66,397	54,441	55,758	1,317	2.4%
Warren	230,579	26,413	39,823	13,411	50.8%
Total North Jersey	2,635,711	838,395	1,036,778	198,382	23.7%
New Jersey	4,651,925	1,209,138	1,532,315	323,178	26.7%

Hasse and Lathrop (2002-2010)

2.1.4 Quality of Natural Lands

Natural lands can serve multiple purposes, providing recreation opportunities and farmland as well as supporting complex and intertwined natural systems that sustain water resources, managing stormwater, and comprise ecosystems that support plant and animal habitat. Plants can stabilize steep slopes, reducing erosion. Natural floodplains and coastal areas reduce the impacts from floods and storm surges, protecting lives and property. Forested riparian areas help to slow and filter stormwater before entering a stream, reducing the need for expensive stormwater mitigation and water treatment technology. Forests also help to regulate temperatures underneath the canopy. In urban areas, trees help to mitigate the higher temperatures that are created as a result of the urban heat island effect. In natural areas, dense forest cover over waterways regulate water temperatures; reduced temperatures help to maintain biodiversity as colder water holds more oxygen. Natural lands take on distinct forms where the sea meets the land in North Jersey's coastal and estuarine areas.

Natural lands also maintain critical ecosystems. The New Jersey Natural Heritage Priority Program recorded 343 instances of rare plants, animals and ecological communities in the state in 2007. Of these sites, 207 were recorded in North Jersey. The New Jersey [Landscape Project](#) is a pro-active, ecosystem-level approach for the long-term protection of imperiled species and their important habitats in New Jersey managed by the NJ Department of Environmental Protection (New Jersey Department of Environmental Protection). Landscape Project [critical area maps](#) delineate areas of critical importance for imperiled species throughout North Jersey (See Appendix B). They are most prevalent in the northwest portion of the region, with the greatest amount of habitat for federally listed species falling within the NJ Highlands region. Leaving ecosystems intact helps to sustain local biodiversity and limit introduction of invasive species or the uncontrolled growth of native species.

Disturbances to natural lands produce mixed results. Anthropogenic breaks in habitat continuity can foster native species attuned to edge habitats, however, if incorrectly managed, can also encourage invasive species growth. Natural disturbance, such as fire, can help to reintroduce native species that require these disturbances

for survival, such as the pitch pines in the Pine Barrens. Breaks in habitat may also eliminate critical wildlife transportation corridors necessary for species survival. Land preservation efforts that help connect preserved landscapes helps to ensure these corridors exist. When wildlife corridors do not exist, manmade remedies have been used in New Jersey, such as the wildlife overpass on Interstate 78 in Union County.

In addition to continuity of habitat, a diversity of habitats is also necessary to maintaining species that require different habitats at different life stages. While exclusive preservation of forestland will provide recreation opportunities, stormwater control and other benefits, this may have unintended negative consequences for species that require grasslands to hunt prey, or marsh habitat to mate.

A variety of natural lands sustain water resources, both groundwater and surface water. They are best considered within the context of the watershed, and include aquifer productivity areas, groundwater recharge areas, headwaters of streams, drainage areas to surface water bodies, floodplains and riparian corridors. (See the TNJ Water Resources Baseline Report.)

Figure 2.9 Value of Natural Capital in New Jersey

Ecosystem	Value (Dollars per acre per year)
Freshwater Wetland	\$11,802
Marine	\$8,670
Farmland	\$6,229
Forest Land	\$1,714
Saltwater Wetland	\$6,269
Barren Land	\$11,337
Urban	\$296
Beach/Dune	\$42,149
Open Fresh Water	\$1,686
Riparian Buffer	\$3,500
Average Value	\$4,630

New Jersey Department of Environmental Protection (April 2007)

Natural lands also provide economic benefits. A report by the New Jersey Department of Environmental Protection (DEP) quantified the economic value of natural goods and services from different ecosystems, examining the direct and indirect (ie tourism) benefits (New Jersey Department of Environmental Protection, 2007). Figure 2.9 shows the annual per acre value of natural goods and services from nine New Jersey ecosystems. This study found that beach/dune habitats annually provide over \$42,000 per acre, while an urban ecosystem contributes only \$296. A 2009 study by The Trust for Public Land found that every \$1 invested in state land preservation programs returns \$10 in economic value through nature's services, such as flood control and filtering air and water of pollutants (The Trust For Public Land, 2009).

2.2 Preserved Lands in North Jersey



Figure 2.10 Cherry Blossoms in bloom at the Branch Brook Park in Newark, part of the Essex County Park System. (Siddharth)

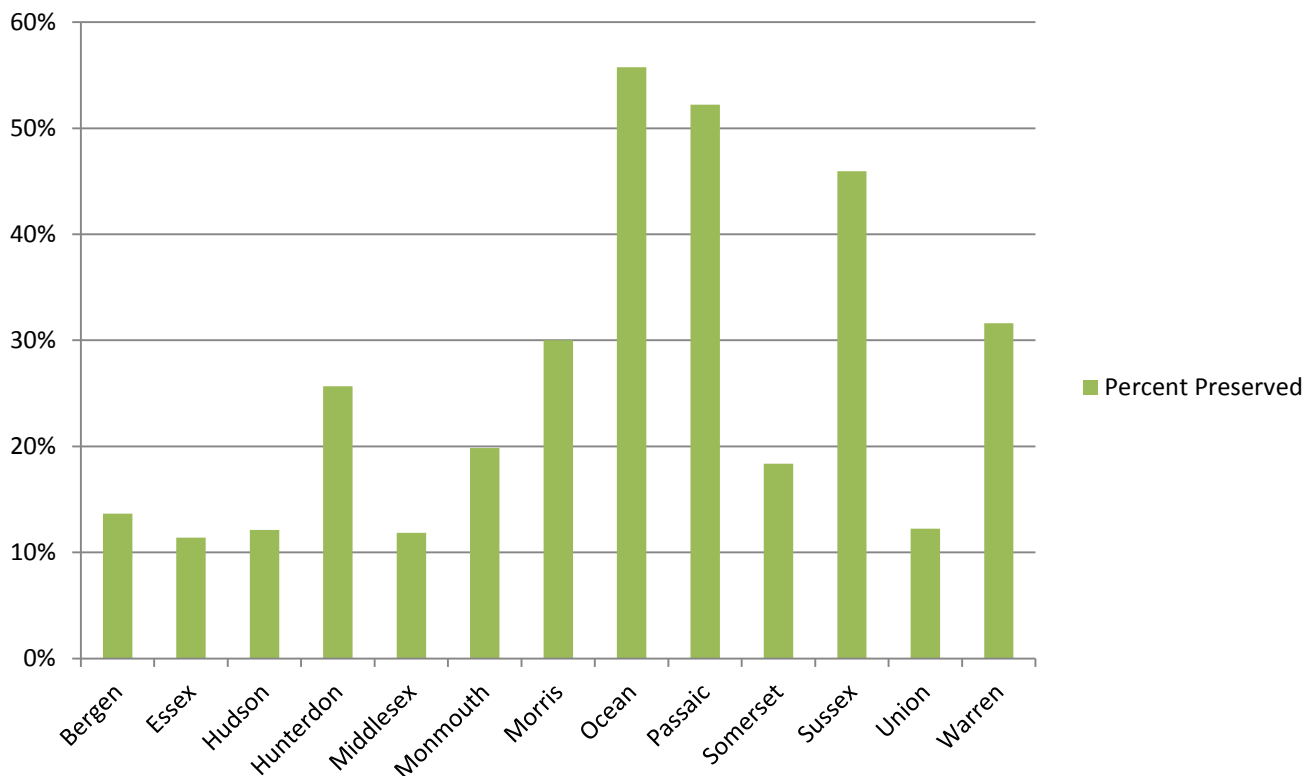
The character of preserved lands varies by community based upon the needs of the local and broader population (See Appendix C). In urban areas where open space comes at a premium, small “pocket parks” can provide residents with spaces to recreate, while a community garden can provide a community with better nutritional options than may already exist. In mountainous areas, land preservation can protect the sources of drinking water. In all locations, where natural lands and parks abut homes, they enhance neighboring property values⁶. Protection of woodland and riparian areas not only creates benefits previously mentioned, but also provides recreational opportunities for hiking, biking, horseback riding, birdwatching, fishing and hunting. In areas prone to flooding, restoration of floodplains and beach habitats may help to reduce the severity of future flooding. In rural agricultural regions, farmland preservation helps to keep farming in New Jersey and provide residents with more options of locally-sourced foods (See Appendix D).

The varying ecosystems across the North Jersey region have resulted in different needs for open space. Regardless of needs, land preservation is a value shared throughout the region. In Figure 2.11, each of the

⁶ The average home value increases 16% when it is located within 1,500 feet of natural areas and parks contribute up to 20% of the value of homes in urban areas. (New Jersey Keep it Green, 2011)

thirteen counties has preserved at least 10% of their total land area as open space or farmland. Counties in the urbanized northeast (Bergen, Essex, Hudson, Middlesex and Union) have lower levels of percentages of preserved land, than many of the western rural counties (Hunterdon, Morris, Sussex, and Warren). Large federal lands, as well as state parks and forests in Ocean and northern Passaic County have resulted in the preservation of over half the available land area. As of the most recent surveys, 699,643 acres of open space (2012) and 81,825 acres of farmland (2013) have been preserved in North Jersey, together comprising 30% of the total land area (See Appendices E and F).

Figure 2.11 Preserved Land as a Percentage of County Land Area in North Jersey⁷



New Jersey Statewide Comprehensive Outdoor Recreation Plan (2012 Draft); SADC 2013

⁷ Preserved land estimates are based upon the most recent draft of the New Jersey Statewide Comprehensive Outdoor Recreation Plan (2012) and preserved farmland from the State Agriculture Development Committee (May 2013). These values may not include privately preserved lands or parks (lands preserved without the use of state or federal funding),.

Calculations of the percent preserved lands were measured against the total calculated area of each county, with the exception of Hudson and Ocean Counties, where the total land area was used for the calculation (Hudson and Ocean Counties both have over 10% of "land" area as water). As these values were used in the determination of land use acreage throughout the DEP Analysis by Hasse and Lathrop, it was decided to err on the side of consistency.

2.2.1 Farmland Preservation

Farmland preservation has helped many communities to retain their farming industries in the face of development pressure (See Appendices G and H). Assuming minimal development of farmland occurred since the last Census of Agriculture in 2007 as a result of the recession, New Jersey has approximately 730,000 acres in farms, 366,141 in North Jersey. Of these 730,000 acres, over 200,000 have been preserved (representing 2,137 farms) statewide as of May 2013, with 81,825 acres in North Jersey. The Department of Agriculture website features a rich array of maps depicting pending and preserved farmland easement at the scale of the state, three regions, 18 counties and 60 municipalities. The municipal maps allow one to view preserved farmland in the context of all active farmland. All of the maps also show preserved open space.

These numbers suggest that approximately 280,000 acres of unprotected farmland exists in North Jersey. The future use of these lands represents enormous planning challenges.

Figure 2.12 New Jersey Farmland Preservation Program Preserved Farmland, 2002-2013

Participating Counties	Number of Farms (2002)	Acreage (2002)	Average Farm Size (2002)	Number of Farms (2013)	Acreage (2013)	Average Farm Size (2013)	Acreage Increase 2002-2013
Bergen	1	216	216	7	318	45	47%
Hunterdon	102	11772	115	360	29,215	81	148%
Middlesex	24	3393	141	50	4,666	93	38%
Monmouth	61	7491	123	188	14,378	76	92%
Morris	53	3867	73	118	7,319	62	89%
Ocean	21	2050	98	48	3,247	68	58%
Passaic				1	15	15	
Somerset	39	4378	112	102	7,992	78	83%
Sussex	41	6996	171	132	14,675	111	110%
Warren	59	8159	138	217	20,671	95	153%
Total North Jersey	401	48322	121	1006	81,825	81	69%

New Jersey State Agriculture Development Committee (January 2012; May 17, 2013)

2.2.2 Parks, Greenways, Open Space

The nearly 700,000 acres of preserved open space in North Jersey varies across the region, including parks, preserves, historic landmarks, lakes, playing fields, beaches, grasslands, forests, playgrounds and wildlife sanctuaries. These range in size from the Pinelands region, where over 200,000 acres have been preserved by the state, the 7,400 acre Great Swamp National Wildlife Refuge in Morris County, the 4,000 acre Sourland Mountain Preserve in Somerset County, the 1,100 acre Liberty State Park in Hudson County to smaller municipal parks in rural, suburban and urban communities. The 2,184-mile Appalachian Trail that spans from Georgia to Maine passes through northwest New Jersey, along the Delaware Water Gap National Recreation Area, Stokes State Forest, High Point State Park, Wawayanda State Park and Abram S. Hewitt State Forest. The East Coast Greenway, which will connect Maine to Florida, follows the D&R Canal Towpath from Trenton to New Brunswick, and will eventually connect Newark and Jersey City to Manhattan.

In addition to the preserved open space, thousands of acres of private open space throughout the region and state are used for sportsmen's clubs, scouting groups, skiing, and arboreta.

Figure 2.13 Per Capita Open Space

County	July 1, 2012 Census Estimate	2012 Preserved Open Space Total	Per Capita Acreage Open Space
Bergen	918,888	20,596	0.02
Essex	787,744	9,317	0.01
Hudson	652,302	3,058	0.00
Hunterdon	127,050	42,385	0.33
Middlesex	823,041	19,085	0.02
Monmouth	629,384	45,943	0.07
Morris	497,999	84,937	0.17
Ocean	580,470	177,766	0.31
Passaic	502,885	65,733	0.13
Somerset	327,707	27,857	0.09
Sussex	147,442	142,605	0.97
Union	543,976	8,121	0.01
Warren	107,653	52,240	0.49
Total North Jersey	6,646,541	699,643	0.11

New Jersey Statewide Comprehensive Outdoor Recreation Plan (Draft) and the US Census Bureau



Figure 2.14 New Jersey Farm. (Staff Photo, No Date)

Figure 2.15 Land Preservation Over Time 2002-2007

County	Total Preserved Open Space (2002)	Total Preserved Open Space	Change in Preserved Open Space (2002-2012)	Percent Change (2002-2012)
Bergen	19,465	20,596	1,131	6%
Essex	9,060	9,317	257	3%
Hudson	3,045	3,058	13	0%
Hunterdon	24,758	42,385	17,627	71%
Middlesex	17,318	19,085	1,767	10%
Monmouth	38,080	45,943	7,863	21%
Morris	65,461	84,937	19,476	30%
Ocean	161,655	177,766	16,111	10%
Passaic	48,117	65,733	17,616	37%
Somerset	28,129	27,857	-272	-1%* ⁸
Sussex	108,183	142,605	34,422	32%
Union	8,097	8,121	24	0%
Warren	41,528	52,240	10,712	26%
Total North Jersey	572,896	699,643	126,747	22%

SCORP 2002 and 2012 (Drafts)

Figure 2.16 Preserved Land in North Jersey

County	County Land Acreage	Preserved Open Space (2012)	Preserved Farmland Acres (2013)	Percent of County Preserved
Bergen	153,046	20,596	318	14%
Essex	81,737	9,317		11%
Hudson	25,260	3,058		12%
Hunterdon	278,923	42,385	29,215	26%
Middlesex	200,513	19,085	4,666	12%
Monmouth	303,849	45,943	14,378	20%
Morris	307,398	84,937	7,319	30%
Ocean	324,612	177,766	3,247	56%
Passaic	125,908	65,733	15	52%
Somerset	195,094	27,857* ⁹	7,992	18%
Sussex	342,396	142,605	14,675	46%
Union	66,397	8,121		12%
Warren	230,579	52,240	20,671	32%
Total North Jersey	2,635,711	699,643	81,825	30%

New Jersey Statewide Comprehensive Outdoor Recreation Plan (2012 Draft); SADC 2013

⁸ Data from the 2002 *New Jersey Statewide Comprehensive Outdoor Recreation Plan* and the 2012 draft update appear to suggest that between 2002 and 2012, Somerset County *lost* preserved open space acreage. While a reduction in preserved open space is technically possible, this is likely an aberration that arose from a correction of the 2002 data through a survey, or from land reassigned to a different government agency.

⁹ See Above.

3 Planning, Policy, and Implementation Context



Figure 3.1 The Columbia Trail in Chester Township, Morris County. The Columbia Trail falls under the jurisdiction of Hunterdon County's Division of Parks and Recreation, as well as the Morris County Park Commission. The trail provides pedestrians, bicyclists and cross country skiers connections to village centers in Long Valley (Washington Township), as well as the boroughs of Califon and High Bridge, and is an example of a rail-to-trail development that also includes the co-location of a natural gas transmission line. (Staff photo, 2011)

This section describes the regulations, plans and spending programs (for acquisition and stewardship) managed by all levels of government that are intended to protect and preserve natural lands and their features.

All three approaches – regulation, planning and spending - are important components of a comprehensive land use preservation strategy. For example, land use planning can provide a framework to coordinate and reconcile competing government activities, such as road-building or economic development incentives so that they don't undermine preservation objectives.

3.1 Acquisition & Stewardship Programs

Land preservation programs are funded and managed on the federal, state, county, local, nonprofit and private levels for many purposes including recreation, conservation and farmland preservation. As such, these programs differ by funding structure and governing agency.

3.1.1 Federal Programs

Federal land acquisition and stewardship programs vary based upon the agency and scope of work involved.

In North Jersey, the National Park Service manages the Gateway and Delaware Water Gap National Recreation Areas, the Pinelands National Reserve, the Appalachian Trail, as well as National Historic Parks in Paterson, Edison, Morristown and Jersey City. The Park Service works with state and local partners to fund preservation projects that meet goals related to recreation, historic preservation or natural resource conservation.

The National Park Service's Land and Water Conservation Fund (LWCF) has been used to fund open space and recreation projects in New Jersey. From 1965-2007, the Land and Water Conservation Fund has awarded New Jersey \$112,243,252 (New Jersey Department of Environmental Protection: Green Acres Program, 2007). Over the last decade, the funding allocations for New Jersey from the LWCF have varied, going from \$3,888,956 in fiscal year 2002, to \$756,089 in fiscal year 2007, to \$1,127,109 in fiscal year 2012 (Jandoli, 2013). As of 2007, LWCF funding has been responsible for the completion of 300 projects in New Jersey, totaling 72,813 acres of land, nearly two hundred of which took place in North Jersey (New Jersey Department of Environmental Protection: Green Acres Program, 2007).

The Fish and Wildlife Service manages the five National Wildlife Refuges within New Jersey, totaling over 75,000 acres in New Jersey. Three of these refuges (Edwin B. Forsythe, Great Swamp, and Wallkill River) are located in North Jersey.

The United States Department of Defense holds ownership over large tracts of land in North and South Jersey for military installations and other facilities. As these lands are largely undeveloped, the Department plays an indirect role in land preservation as a large-scale landowner.

The United States Department of Agriculture's National Resource Conservation Service (USDA NRCS) provides funding and assistance to landowners for land preservation through easements, habitat enhancements and other cost-sharing agreements. These funding programs are directed towards farmland, forestland, wetlands and grasslands. Department programs, such as the Forest Legacy Program have helped to preserve over 14,000 acres of forestland in the Highlands region. Other NRCS programs, such as the Conservation Reserve Program, worked with a farmer in northwest New Jersey to restore a section of riparian buffer on his property along the Musconetcong River (United States Department of Agriculture).

3.1.2 State Programs

State preservation programs have focused on parks and open space, farmland preservation and the conservation of flood-prone areas. The first New Jersey-sponsored preservation program, Green Acres, was created over fifty years ago in response to suburban development and the need for open space for preservation and recreation (New Jersey Keep it Green, 2011). A program focusing on farmland preservation began in 1983, and another program, "Blue Acres," was started in 1995 to restore natural floodplains through the purchase of flood-prone properties.

3.1.2.1 Green Acres

The Green Acres program was created in 1961 to preserve open space for recreation and environmental protection. It is managed in DEP. By statute, half of all Green Acres expenditures fund local projects¹⁰ where individual communities or nonprofit organizations make acquisition decisions. With funding decisions driven by localities (and state control limited to a list of basic program requirements¹¹), the program has always enjoyed strong grass-roots support.

During its first fifty years, Green Acres has contributed to the preservation of more than 650,000 acres of open space and provided hundreds of parks and outdoor recreational facilities in every county (Keep It Green 2012). In addition to preserving land, the Green Acres programs fund park development projects in coordination with local governments and nonprofit organizations as well as improvements to state parks, wildlife management areas and other state holdings.

Through the half of its budget reserved for **direct “state” acquisitions**, the Green Acres program serves as the “real estate agent” for the DEP. Land is acquired for state parks, forests, watershed protection, natural areas and wildlife management areas. Such lands are transferred to the DEP Divisions of Parks and Forestry and Fish and Wildlife and the New Jersey Natural Lands Trust, or to local governments or nonprofit organizations.

Approximately 40% of Green Acres funds go to **municipal and county governments** to acquire open space and develop outdoor recreation programs. Through its most generous program for local governments, the **Planning Incentive Acquisition Program (PI)**, Green Acres encourages municipalities and counties to plan strategically for open space preservation. A flexible, streamlined application process, matching grants of 50 percent, and higher project caps are made to localities with an approved Open Space and Recreation Plan (OSRP) and a dedicated local funding mechanism.

Green Acres also provides matching grants to **nonprofit organizations** to acquire land for public recreation and conservation purposes. In addition, Green Acres funding is also used to match revenue from hunting and fishing licenses to acquire lands for New Jersey’s Wildlife Management Areas (New Jersey Department of Environmental Protection: Green Acres Program, 2007).

Demand for Green Acres funds outstrips supply. According to a 2012 report, in the previous ten years, for example, Green Acres’ Local and Nonprofit Assistance Program has been able to fund only 22% of requested acquisition and park development matching funding, with an average annual gap of \$340 million (New Jersey Keep it Green, 2011).

¹⁰ The GSPT Act apportions annual Green Acres funding between three project areas as follows:

- 50 percent for state (or “direct”) projects, with 20 percent of that designated for “urban” counties.
- 40 percent for local acquisition and development projects; and
- 10 percent for nonprofit acquisition.

¹¹ Eligible acquisition projects include natural areas, historic sites, conservation areas, water bodies and recreation areas. Former landfill sites, for example, are not permitted acquisitions. Public access is always required. In addition, local governments are required to certify to a Recreation and Open Space Inventory by which the local government agrees to permanently hold, for recreation and conservation purposes, all other lands so held at the time of receipt of a Green Acres loan or grant.

3.1.2.2 *Blue Acres*

Housed within the Green Acres Program is the so-called “Blue Acres” program, dedicated to purchasing flood-prone properties and preserving them for recreation and conservation purposes. The program was created in 1995. Subsequent bond issues in 2007 and 2009 directed Blue Acres funds to the floodways of the Delaware River, Passaic River and Raritan River floodways. Eligible properties are those that have been storm damaged, that are prone to incurring storm damage, or that may buffer or protect other lands from such damage.

Governor Christie announced a dramatic expansion of the Blue Acres program in May 2013, dedicating \$300 million in federal funds to give homeowners the option of selling their properties damaged by Superstorm Sandy in tidal areas of New Jersey. The buyout plan involves approximately 1,000 homes impacted by Sandy, in addition to another 300 repetitively flood-damaged homes located in the Passaic River Basin. The buyout program will be operated on a willing-seller basis. The state is targeting clusters of homes or entire neighborhoods, in order to create contiguous areas of open space.

The [Pompton Riverwalk](#) is a highly successful example of coordinating a buyout program with more traditional municipal and county open space programs. Led by the Township of Pequannock, the effort has acquired 22 properties and linked them into a new community park (New Jersey Future, 2013).

3.1.2.3 *Farmland Preservation*

New Jersey’s Farmland Preservation Program is managed by the Department of Agriculture’s State Agriculture Development Committee (SADC). Since the program’s inception in 1983, the Farmland Preservation Program has protected over 200,000 acres of agriculture lands across New Jersey.

The SADC preserves farmland through the fee simple purchase of farmland, purchase of development rights, acquisition of donated development rights, as well as through temporary preservation agreements that provide landowners incentives and protections. Following the acquisition of a property or its development rights easement, the SADC is responsible for the post-preservation monitoring and enforcement to ensure the property’s use remains under the terms of the program.

SADC also works with farmers to ensure that farming remains a viable industry in New Jersey and reduce other burdens that could lead a farmer to sell his land for development. The state’s Right to Farm Act, also passed in 1983, protects commercial farmers who are employing accepted agricultural management practices from nuisance complaints. While new residents of a “farm view” subdivision may have purchased the property due to its rural character, they may not understand farming operations. The Right to Farm Act protects farmers from complaints that arise on such issues as noise and dust.

3.1.3 *Other Open Space Preservation*

Other means of land preservation exist beyond the purchased acquisition of land by a government or non-profit entity. For example, individuals wishing to include a community in their estate planning may sometimes will their property or development rights for the use and enjoyment of the public. Depending on the restrictions placed by the individual on the property, this property may be leveraged for more strategic land preservation targets. Other times, charitable foundations may assist in the development of a public park or community garden. Other types of land conservation activity include:

- Exactions or other agreements undertaken by municipalities and developers during the development review process, such as through cluster or planned development.

- The sale of Transfer of Development Rights credits.
- Land dedicated through state regulatory programs, including land set aside through mitigation.

One of the challenges in open space preservation is the conflict between the use of public dollars and the guarantee of public access. Many open space programs require some degree of public access. Individuals wishing to sell their development rights may not be interested in welcoming the public and potential issues of liability onto their property. By preserving land with private funding through other channels, such as a land trust, individuals can ensure the protection of their land without welcoming public use of the property.

3.2 Acquisition Strategic Planning – the Geography of Preservation

Our increased understanding of and appreciation for natural systems and the importance of “green infrastructure” has focused attention on the need to protect larger, more integrated project areas – our life-sustaining ecosystems, watersheds, recreational networks and farmland regions. This section examines the strategies (or lack thereof) behind land conservation decisions by government-funded programs (at both the state and local levels) and through nonprofit initiatives in an effort to understand the contribution they make to various environmental, agricultural and recreational goals.

3.2.1 State Farmland Preservation

According to SADC staff, the state aims to preserve a total of 600,000 acres of farmland, or an additional 400,000 acres in addition to the 200,000 acres that are already preserved. Reaching this goal will require a multi-pronged strategy, including:

- Effective land use plans, regulations (especially zoning) and infrastructure investment strategies that discourage development in the interim period before preservation occurs
- Significant increases in preservation funding. If the average per acre cost of preservation remained at the 2013 level of \$7,699 (unlikely), preserving 400,000 acres statewide will cost over \$3 billion.
- Increased reliance on alternative approaches to preservation that can preserve land at a lower cost to taxpayers, notably density transfer programs such as Transfer of Development Rights and noncontiguous clustering.
- Strategic targeting of the most important farms.

The SADC has made great strides in encouraging more systematic preservation decisions by working closely with county and municipal government, the entities that drive many farmland preservation programs. By the end of 2012, a total of 18 counties and 46 municipalities had developed comprehensive farmland preservation plans that enable them to participate in the SADC’s County and Municipal Planning Incentive Grant (PIG) Programs. The plans identify short- and long-term farmland preservation goals as well as strategies to sustain agriculture as an industry. Altogether, the plans seek to preserve approximately 216,000 acres over a 10-year period at a total cost of \$2.5 billion. The SADC [website](#) links to 16 of the approved county farmland preservation plans and 35 approved municipal farmland preservation plans (New Jersey Department of Agriculture). Still, there is no single published map depicting farmland preservation priorities statewide.

Municipalities that are serious about farmland preservation and participate in the more generous Planning Incentive Grant (PIG) program increasingly coordinate acquisition with local master plans and zoning. They are required to adopt a farmland preservation element as part of the municipal master plan or county strategic plan. (Of course this requirement does not necessarily lead to the most effective zoning strategies, but it is a start.) And even highly committed municipalities with aggressive farmland preservation programs may be undermined by intrusive land development (see this [map](#) of preserved farmland in East Amwell, which is interspersed with many developed parcels and many active farms not yet preserved.) The SADC also uses the designation of Agricultural Development Areas (ADAs) to encourage coordination of land use planning with strategic farmland acquisition.

Counties in New Jersey that desire state farmland preservation funding must designate ADAs according to N.J.A.C. 2:76-1 where “agriculture shall be the preferred, but not necessarily the exclusive, use of land” (NJSA 4:1C-18). The SADC has established minimum requirements for this area, within which land is eligible for various farmland preservation programs:

- Encompasses productive agricultural lands which are currently in production or have a strong potential for future production in agriculture and in which agriculture is a permitted use under the current municipal zoning ordinance or in which agriculture is permitted as a nonconforming use.
- Is reasonably free of suburban and conflicting commercial development.
- Comprises not greater than 90 percent of the agricultural landmass of the county.
- Incorporates any other characteristics deemed appropriate by the CADB.

These requirements are designed not only to focus farmland preservation programs where agriculture is viable, but also to steer preservation investments away from areas targeted for development.

3.2.2 Open Space/Green Acres

Will update based on pending conversation with Green Acres.

3.2.3 County and Municipal Open Space Preservation

With 40% of Green Acres funding going to local government preservation projects, encouraging strategic preservation decisions at the local level is an important approach. The most generous Green Acres program for local governments, the Planning Incentive program, encourages planning for preservation. It requires adoption by participating counties and municipalities of an Open Space and Recreation Plan (OSRP) that articulates a local government's vision of open space and recreation, identifies and examines open space and recreation resources and lays out ways to protect them. The OSRP must include a map showing the location and configuration of all existing public and private open space and recreation resources and sites identified as having open space and recreation potential. The [OSRP guidelines](#) encourage consideration of the strategic analysis conducted by the Garden State Greenways (New Jersey Department of Environmental Protection, 2010). But the program does not conduct a qualitative review of OSRPs, which vary greatly in quality. Some municipalities such as Robbinsville in Mercer County have tiered lists of parcels, according to their priority for open space preservation. Others simply map all undeveloped parcels.

The OSRP guidelines also encourage coordination with land use plans. They encourage consistency with the State Development and Redevelopment Plan. And they require the municipal or county planning board to adopt the OSRP as part of the local master plan.

3.2.3.1 Other Strategic Acquisition Planning Efforts

In addition to the plans and organizations mentioned above, many other regional, local, and community groups exist that focus on land stewardship. These groups include local and regional land trusts, watershed organizations, neighborhood and civic organizations, sportsmen's organizations, garden clubs and other horticultural societies. Based upon their specific needs, these organizations may set up strategic frameworks for targeted outreach or acquisition. As conservation and preservation groups compete for scarce resources, organizations have sought common ground with government and other groups to pool funding and expertise into targeted projects.

3.2.3.2 NJCF Garden State Greenways

Open space planning for green infrastructure focuses on the preservation of large contiguous important tracts, known as "hubs." When existing development or other conditions prohibit hub expansion, connections through small-scale land preservation or a natural feature (such as a waterbody) ensures the continuity of habitat and a natural corridor that serves ecological and recreational benefits, known as "connectors." The Garden State Greenways Program, a joint project from the New Jersey Conservation Foundation, the Walton Center for Remote Sensing and Spatial Analysis (CRSSA) of Rutgers University and the State's Green Acres Program, has promoted the strategic conservation of high-value interconnected open spaces. Garden State Greenways has helped to guide future farmland and open space planning and acquisition through the development of an online planning tool that can identify relevant natural features critical to working ecosystems. The online tool allows government, planners and the public to visually understand the state's built and natural environments, in relation to existing preserved lands and trails (New Jersey Conservation Foundation, 2010).

The importance of establishing these natural hub connections, according to the Garden State Greenways Program, is that they help to serve as a network of critical green infrastructure. Greenways not only provide habitat, but can also act as stream buffers, pedestrian paths and as a form of streetscape beautification. In assembling the visual data related to natural systems and preserved lands in relation to other community facilities and infrastructure into a single program, the Garden State Greenways mapping tool allows planners, policymakers and the general public the ability to view this information in a user-friendly web application. This

can help to foster collaboration between conservation agencies, developers and municipalities, as well as state and local government to guide future master planning, open space acquisitions, zoning, and other development decisions.

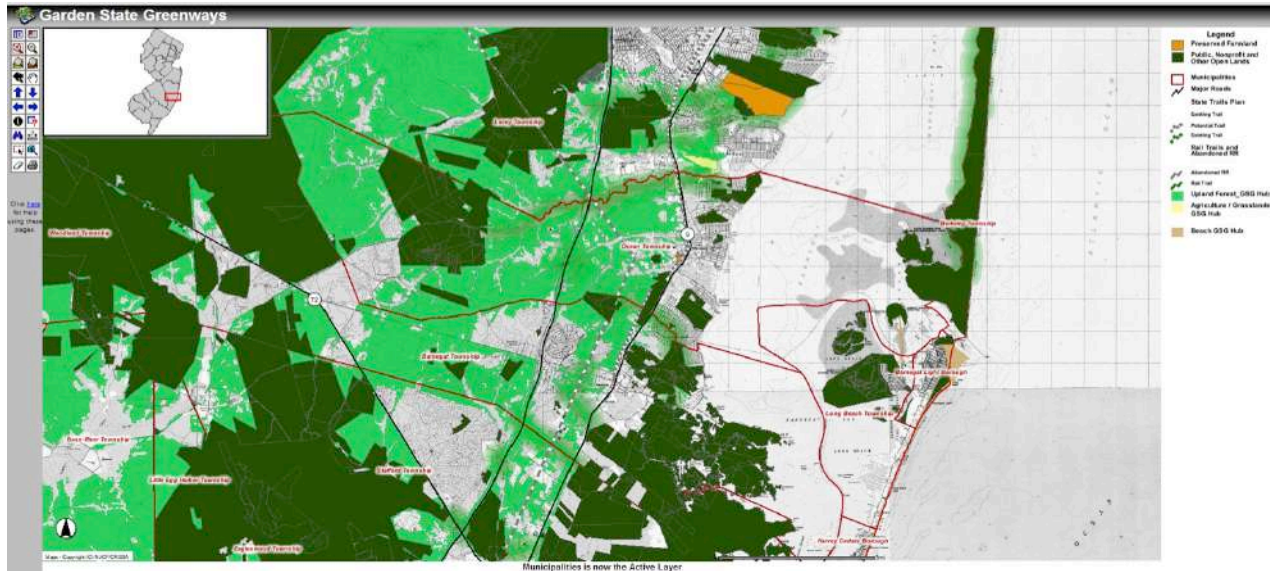


Figure 3.2 Garden State Greenways Online Mapping Tool (NJCF)

3.2.3.3 The Nature Conservancy “Conservation Lands Blueprint”

New Jersey’s chapter of the Nature Conservancy is in the process of developing a “Conservation Blueprint” for the state to guide regional open space planning. The Conservation Blueprint provides a long-term suggested framework for landscape preservation based upon projected development patterns in the state over the next 30 years. Similar to the aims of the Garden State Greenways Project, the Blueprint will help to identify hubs and connectors that create contiguous landscapes for wildlife and ecosystems. Unlike the Greenways Project, the Blueprint will not focus on farmland preservation, nor does the Blueprint include urban infill acquisitions of open space or water conservation (Allen, 2013).

3.2.3.4 Regional Plan Association Landscape Conservation

The Regional Plan Association’s Northeast Landscape Conservation project was initiated in 2012 to assess the conservation landscape initiatives across the northeastern United States from Virginia to Maine. The Regional Plan Association has been collecting landscape conservation plans from the many public and non-profit agencies to identify important areas for growth or protection, and to identify funding and partnerships (Regional Planning Association, 2013).

3.3 Acquisition Funding

Funding for land preservation varies as much as the programs involved and can play a large role in how a program is utilized. As with other programs that require funding, public (and political) support guides the

structure of a preservation program: how the program is funded, why the program is funded, what projects are funded and where are they located?

On the government level, funding may come from dedicated taxes for open space or farmland preservation, bond referenda, grants, subdivision requirements, fines or from the sale of goods or permits. Private and nonprofit organizations may have access to some of these public funds through grants or partnerships, but they also have access to private sector funding that may not be available to public entities. Depending on the financial and political climates, certain preservation campaigns may be more palatable than others. Open space preservation may be popular when increased suburban development threatens natural resources (or begins to strain local property taxes). When budgets tighten during times of economic uncertainty, the purchase of land for preservation's sake may not find as receptive of an audience. Framing preservation as accomplishing more than one goal may help to prevent such a backlash, such as constructing passive recreation facilities in floodplains.

New Jersey's two preservation programs, Green Acres and the Farmland Preservation program are respectively administered by two different agencies, the Department of Environmental Protection, and the Department of Agriculture State Agriculture Development Committee, yet the funds presently come from the same source, the Garden State Preservation Trust (GSPT). Since the Green Acres program's start in 1961, preservation was funded through a series of public bond referenda dedicated towards land acquisition. From 1961-1973, Green Acres funding went towards land acquisition on the state and local levels. In 1974, the program began to also fund outdoor recreational development, and in 1978 the fund began to also administer loans as well as the requirement to spend half of the dedicated local funding in urban areas. In 1983 the program funded acquisition and development, as well as began a low-interest loan program, which was renewed in 1987. Subsequent referenda in 1989, 1992 and 1995 included further funding towards the program. The 1995 program also included the first funding for the Blue Acres Program.

In 1999, the voters approved the dedication of funding for the preservation of farmland, open space and historic resources. The implementing legislation, the Garden State Preservation Trust Act, authorized the creation of the Garden State Preservation Trust to annually dedicate \$98 million of sales tax proceeds for thirty years. The first ten years of funding could be used to fund programs directly and/or service up to \$1 billion in revenue bonds. The second twenty years of funding would be dedicated exclusively for debt service payments. Since the passage of the Garden State Preservation Trust, two additional bonds were passed to dedicate funding in 2007 and 2009 however these funds have begun to dry up (New Jersey Department of Environmental Protection).

At the time of publication (June 20, 2013), no additional funding has been allocated to New Jersey's preservation programs. Concurrent resolutions SCR138/ACR179 were under consideration in the state Legislature; they dedicate one-fifth of a cent from the sales tax to continued preservation funding for thirty years, however their fate remains to be seen.

Figure 3.3 GSPT Appropriations in Millions of Dollars

Fiscal Year	Farmland Preservation	Green Acres
2000	\$78,000,000	\$120,000,000
2001	\$85,000,000	\$120,000,000
2002	\$80,000,000	\$120,000,000
2003	\$78,000,000	\$111,000,000
2004	\$90,000,000	\$174,000,000
2005	\$119,000,000	\$225,000,000
2006	\$99,000,000	\$163,000,000
2007	\$78,000,000	\$88,000,000
2008	\$71,000,000	\$73,000,000
2009	\$74,000,000	\$155,000,000
2011	\$76,000,000	\$109,000,000
2013	\$69,000,000	\$109,000,000
Total New Jersey	\$997,000,000	\$1,458,000,000

Garden State Preservation Trust

The state's Blue Acres Program has received approximately \$66 Million from its inception in 1995 through 2012.

In addition to the state programs, New Jersey's Green Acres Program also administers the federal Recreational Trails Program and the Land and Water Conservation Fund. From 2008 to 2012, the state distributed \$6,098,311 million for the Recreational Trails Program and \$4,512,085 for the Land and Water Conservation Fund.

3.3.1 County and Municipal Open Space Taxes

All of New Jersey's 21 counties have enacted dedicated taxes towards open space. Each of these dedicated taxes ranges from .025 cents per \$100 of assessed tax in Bergen County, to 6 cents per \$100 in Warren County. In 2012, North Jersey counties collected **\$143,544,153, or 71% of the total county funding statewide.**

Less participation exists on the municipal level, however, as 41% of New Jersey's 565 municipalities have programs. Of the 232 participating municipalities, 176 or 75% are located in North Jersey (New Jersey Department of Environmental Protection, May 2013; New Jersey Department of Environmental Protection, November 2012).

Figure 3.4 County Open Space Programs

County	Annual Tax Collected In 2012
Bergen	\$4,675,000
Essex	\$13,000,000
Hudson	\$5,780,419
Hunterdon	\$6,581,000
Middlesex	\$33,000,000
Monmouth	\$17,533,512
Morris	\$10,000,000
Ocean	\$12,021,340
Passaic	\$5,629,051
Somerset	\$17,496,793
Sussex	\$395,000
Union	\$10,288,591
Warren	\$7,143,447
Total North Jersey	\$143,544,153
New Jersey	\$200,987,197

New Jersey DEP

3.3.2 Stewardship Funding

Costs do not disappear as soon as land is preserved. These costs, both direct and indirect, have to be managed by the appropriate authorities. Land intended for public access will require maintenance, whether it is simply for signage and access, or for park equipment, daily cleanup and landscaping, not to mention costs associated with insurance. Municipalities may notice the indirect impact of preserved land as potential ratables are removed from the tax rolls. When a conservation easement purchase extinguishes a landowner's right to develop, ongoing costs are required to monitor and enforce the terms of the easement. In implementing a preservation program that involves the purchase of land, as well as any planning tools that involve the severance of development rights, counties and municipalities must account for the follow-up costs associated with maintenance, stewardship and enforcement so as to ensure the success of the program.

3.3.3 Alternatives to Acquisition

Acquisition for preservation only works when willing landowners and preservation funding exists. While a redevelopment plan could acquire lands through the eminent domain process for a park, open space or farm, this approach is rarely used. Landowners unwilling to part with their property, but who still want to act as positive land stewards have other options available.

A few of the acquisition alternatives include:

- Land Stewardship through Education –Preservation groups, farmers advocacy organizations, charitable foundations, university extensions and local government entities with an interest in land preservation will host workshops for landowners that focus on informed land stewardship. These workshops will answer

questions on topics such as estate planning and sound financial management, viewing demonstration projects, fostering species habitation and removing invasive species.

- **Technical Assistance Funding** – Preservation and conservation organizations, farmers advocacy organizations, as well as state and federal agencies, offer funding to help landowners administer sound stewardship practices. The Common Waters Fund, a program started by the Pinchot Institute, works with landowners in the Upper Delaware River Watershed to fund forest stewardship plans and their implementation, in addition to easement acquisition.
- **Easements** – In situations where protection of an entire parcel is either cost prohibitive or unnecessary to achieve the goals of a certain project, the purchase of certain property rights also offers another conservation tool. Communities interested in developing a trail network have used access easements to connect trails without fee-simple land acquisition.

3.4 Regulatory Programs that Protect Natural Lands

A patchwork of federal and state laws protect natural resources by prohibiting or limiting the disturbance of natural lands in certain circumstances and in certain locations. The implementing state regulations are typically applied on a project-by-project basis during the review of development projects. That said, comprehensive planning efforts typically consider areas subject to regulation when setting policy. (Local land use regulations such as zoning are covered in Section 3.5.4)

New Jersey State regulatory programs that protect natural lands include:

- [Freshwater wetlands](#) The New Jersey Department of Environmental Protection (NJDEP) adopted the Freshwater Wetlands Protection Act Rules (NJAC 7:7A) in 1988 pursuant to the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B) and they were revised most recently in 2009. The rules regulate a variety of disturbances in wetland areas in order to reduce the destruction of wetlands (New Jersey Department of Environmental Protection). (The rules are supposed to lead to “no net loss” of wetlands, but the amount of wetlands continues to shrink.) Wetlands can be found in almost every community in New Jersey, as can be seen on this map of [Bergen County wetlands](#).
- [Streams and Rivers](#) - The Flood Hazard Area (FHA) Control Act Rules N.J.A.C. 7:13 were adopted on November 5, 2007 to implement the New Jersey Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq (New Jersey Department of Environmental Protection). The Flood Hazard Area Control Act rules incorporate stringent standards for development in flood hazard areas and adjacent to surface waters in order to mitigate the adverse impacts to flooding and the environment that can be caused by such development. These areas include land in [riparian zones](#), which range in width from zero to 300 feet along both sides of a waterway.
- NJ Surface Water Quality Standards -- [Antidegradation Designations](#) show the most pristine waters in North Jersey region to be located in the Pinelands region, with many Category-1 streams located in the northwestern part of the state, central Monmouth County and the coastal areas of Ocean County (New Jersey Department of Environmental Protection, 2008).

- **Coastal Areas** – Several laws govern activities in New Jersey’s **coastal zone** including the Coastal Area Facility Review Act of 1973 (CAFRA), the Wetlands Act of 1970, the Waterfront Development Law Tidelands Statutes and the Hackensack Meadowlands Reclamation and Development Act. These laws are implemented in part through the Coastal Permit Program Rules at N.J.A.C. 7:7E and the Coastal Zone Management Rules (CZM Rules) at N.J.A.C. 7:7E (New Jersey Department of Environmental Protection). The State regulates activity in the **coastal area** based upon at least one of two characteristics: the proposed activity is a regulated activity; and/or the project occurs within or adjacent to a regulated coastal area.

3.5 Comprehensive Land Use Planning for Preservation

Under the New Jersey State Constitution, the state is empowered to regulate the use of land. But the *Municipal Land Use Law* (L.1975, c.291) delegates the lion’s share of this authority to the municipal level of government, primarily through the process of local master plans and zoning. Since then, however, the state Legislature has authorized other land use planning frameworks that attempt to guide local land use decisions, such as the *New Jersey State Development and Redevelopment Plan*, and to exert some level of control over land use decisions on a regional basis, including the *New Jersey Meadowlands Master Plan*, the *Pinelands Comprehensive Management Plan* and the *Highlands Regional Master Plan*.

This section describes comprehensive land use planning efforts at all levels of government – state, regional, county and municipal – in terms of how they address the protection of natural lands.

3.5.1 New Jersey State Development and Redevelopment Plan

In 1985, New Jersey initiated a statewide planning process, culminating with the adoption of the *State Development and Redevelopment Plan (State Plan)* in 1992, which was subsequently revised in 2001. The SDRP recommends that New Jersey build on its historic development pattern with growth focused in compact, walkable centers where infrastructure exists, surrounded by protected landscapes of farmland and open space. The plan recommends coordinating policies horizontally across state agencies and vertically through federal, state, regional and local governments, to encourage development in designated growth areas and to foster conservation elsewhere.

The most recent *State Plan*, adopted March 1, 2001, divides the state into seven Planning Areas (New Jersey State Planning Commission, 2001). The Plan provides, for each planning area, a general description of current conditions, delineation criteria, a statement of intent, and state policy objectives.¹²

Two Planning Areas are of interest. The *Rural Planning Area (PA 4)*, the Plan states, comprises much of the "countryside" of New Jersey, where large, contiguous expanses of farmland or woodland surround regional or local centers.¹³ The area comprises 936,301 acres, 19% percent of the state.¹⁴ Goals for PA 4 include:

¹² The Planning Area descriptions summarized here are on pp. 186-229 of the *State Development and Redevelopment Plan*, www.nj.gov/dca/osg/docs/stateplan030101.pdf. The *State Plan* also includes general statewide goals, strategies and policies regarding resource conservation and related issues. Critical Environmental Sites (see Footnote 16, page 12) are described on pp.224-227.

¹³ The *State Plan* also distinguishes PA 4B, the Rural/Environmentally Sensitive Planning Area, where the provisions for PA 5 apply. No distinction is necessary here.

maintaining large contiguous areas of farmland and other open lands; accommodating growth in centers and revitalizing them if necessary; promoting a viable agricultural industry; protecting the character of stable communities; and limiting public utilities to centers.

The *Environmentally Sensitive Planning Area*, PA 5, comprises large contiguous land areas with valuable ecosystems, geological features and wildlife habitats. PA 5 comprises 606,511 acres, or 13% percent of the state.¹⁵ The environmental and economic integrity of the state, the Plan declares, rests in the protection of these irreplaceable resources. Similar to the *Rural Planning Area*, PA 4, the intent of this area is to protect environmental resources through the protection of large contiguous areas of land, with new development guided into centers, and public utilities limited to centers.

Although the Plan's implementation remains voluntary, some state agencies and local governments have begun to integrate its policies and planning areas into their programs (Somerset County Planning Board, 2012). For example, the State Green Acres program and the State farmland preservation program prioritize acquisition in Planning Areas 4 and 5. Conversely, the state's largest economic incentive programs are *not* available to projects located in Planning Areas 4 and 5. Local governments have successfully defended legal challenges to conservation-oriented zoning, based in part on a connection to State Plan mapping designations.

In 2004, the State Planning Commission launched an effort to update the State Plan, as required by statute. This effort became mired in controversy regarding how to update the State Plan map and stalled until the Christie administration launched a new approach to updating the State Plan in 2010.

3.5.2 State Strategic Plan

In November 2012, the State Planning Commission was poised to adopt the [State Strategic Plan](#) (SSP) as a formal update to the 2001 SDRP (New Jersey State Planning Commission, 2012). The draft proposed a different approach to mapping areas for growth and preservation. Instead recommending a detailed, updated State Plan

¹⁴ Figures exclude land in the Highlands, Pinelands and Meadowlands regions. Delineation criteria are: (1) population density < 1,000 people/sq.mi.; (2) areas > one sq.mi.; (3) land currently in agricultural or natural resource production, or having strong potential, based essentially on soil quality; (4) wooded tracts and vacant lands; and (5) outside centers predominantly served by rural two-lane roads and on-site water and sewer.

¹⁵ Figures are for land outside of the Highlands, Pinelands and Meadowlands regions. Delineation criteria are: (1) population density < 1,000 people/sq.mi.; (2) areas > one sq.mi.; (3) trout production and other waters regarded as non-degradable; (4) watersheds of existing and planned potable water supply sources; (5) prime aquifer recharge areas for potable water supplies; (6) habitats of endangered species; (7) coastal wetlands; and (7) contiguous freshwater wetlands systems.

map, the draft proposed identifying a set of “Investment Area” criteria that could be applied by county governments to create their own maps, which could then be adopted by the Commission.

The plan identified four kinds of Investment Areas, including Priority Preservation Investment Areas that would encompass both farmland and open space. These would be delineated as follows:

- For farmland, based on the identification of “Agricultural Development Areas” established by the State Agriculture Development Committee (SADC) within the Agricultural Retention and Development Act.
- For open space, based on the identification of existing open space (federal, state, local and non-profit) and areas identified by local, state, regional and federal government for future preservation.

The plan also allowed for additional areas to be added, upon the recommendation of a county with the support of impacted municipalities.

The simplicity of the proposal raised skepticism about its efficacy. But the Somerset County Planning Board went ahead and applied a version of the State Strategic plan criteria to develop its own [map](#) of Investment Areas that garnered unanimous support from its constituent municipalities (Appendix I). The map distinguishes three types of preservation areas – land that has already been preserved, land that should be preserved, and greenway linkages, which together comprise 49% of the county’s land area (Worstell, 2013). These preservation areas complement growth areas located near infrastructure and existing development. Somerset’s approach has won numerous awards, and is being replicated by other counties in New Jersey.

Somerset County’s Investment framework lays the groundwork for implementation by its municipalities through their own planning, zoning and land acquisition efforts. At this time, however, the State Planning Commission does not recognize the map. The Christie administration directed the State Planning Commission to hold off on adopting the State Strategic Plan in light of Hurricane Sandy, and the SSP remains on hold. As a result, there is no formal basis for state agencies such as the DEP Green Acres program or the Department of Agriculture SADC to support implementation of the Somerset County Investment Framework. However, the opportunity still exists for the State Strategic Plan to be adopted in the future, or for the State Planning Commission to change its rules to allow the use of such county maps as the basis for State Plan updates.

3.5.3 NJ Regional Plans

In addition to the statewide, county and municipal plans, three areas in New Jersey have been designated by the state as regional planning areas: the Highlands (seven counties, all in North Jersey), the Pinelands (portions of seven counties, one of which in North Jersey), and the Meadowlands (portions of fourteen municipalities, all in North Jersey) (See Appendices J-L). These entities have the authority to carry out and enforce regional land use planning as set forth in their enabling legislation and their comprehensive planning documents. In addition to the three regional planning areas, New Jersey also serves as a member on the five-member Delaware River Basin Commission (Appendix M).

3.5.3.1 New Jersey Highlands Council

The 859,358 acre New Jersey Highlands region was established in 2004 through the New Jersey Highlands Water Protection and Planning Act as a response to rapid suburban sprawl development in order to protect the drinking water supplies for half of the state’s population (State of New Jersey Legislature, 2004). As a result of the act, the Highlands Council’s charge to protect drinking water also provides the NJDEP and the Council with some authority over land use decision-making throughout the region. The 2008 Master Plan for the Highlands Region “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” (New Jersey Highlands Council, 2008). The act splits the region into “Planning” and “Preservation”. While activities in the “preservation” areas must remain in conformance with the regional Master Plan and DEP regulations, municipal conformance is voluntary within the “Planning” area. The Highlands Act permits Preservation Areas to continue existing uses including agriculture, as well as the redevelopment of brownfields and impervious surfaces, but prohibits expansion of water and sewer in these areas and imposes strict limits on development effectively curbing intensive development.

3.5.3.2 New Jersey Pinelands Commission

Preservation of the New Jersey Pinelands region (an area of over one million acres of forests, farms and rural communities) has been a joint effort by the federal government and New Jersey since 1978 and 1979, respectively. A small portion of the Pinelands region overlaps with the North Jersey region in Ocean County. The federal government declared the Pinelands the nation’s first National Reserve in 1978. The following year, the New Jersey Pinelands Protection Act was established in 1979 to protect the Pinelands Region from development and ensure the protection of unique critical habitats, source water supplies and cultural resources. Land use management in the Pinelands is governed by the New Jersey Pinelands Commission, which has the responsibility to establish a regional plan (the Comprehensive Management Plan) and enforce its implementation through review of municipal planning (zoning, master plans and land use ordinances) and development review decisions, review water supply and quality activities, protect cultural and historic resources, support land protection measures and monitor the region’s economy

One of the most notable accomplishments of the Pinelands Commission has been its successful implementation of a Transfer of Development Rights (TDR) program known as the Pinelands Development Credit Program (PDC). To ensure the protection of the Pinelands’ critical areas, the Preservation Area and agricultural districts, developers can purchase development credits from these critical areas that allow them to build at higher residential density in specified receiving areas. As of 2011, this program has protected more than 58,600 acres of land through the severance of 7,060 development rights (New Jersey Pinelands Commission, 2012). The PDC transfer program has successfully helped to concentrate development in areas suited for development while protecting critical habitats and agriculture, a staple of smart growth planning.

3.5.3.3 New Jersey Meadowlands Commission

Different in scope from the Pinelands and Highlands planning regions, the Hackensack Meadowlands District is also the smallest of New Jersey’s regional planning regions. At 30.4 square miles in size, the District is 23% of the size of the Highlands or 18% of the Pinelands. Located in the highly urbanized Hudson and Bergen Counties, the Hackensack Meadowlands District was established in 1968 through the Hackensack Meadowlands Reclamation and Development Act to guide natural resource protection, land development and solid waste disposal (New Jersey Meadowlands Commission, 2002). Instead of focusing on natural resource protection, the Meadowlands District contained areas of environmental degradation that necessitated cleanup. Land use for the Meadowlands District is guided by the New Jersey Meadowlands Commission Master Plan. Similar to the responsibilities of the Highlands and Pinelands, the District is governed by the New Jersey Meadowlands Commission, an appointed board responsible for land use planning within the District, adopting codes to implement the plan, issuing bonds, conducting redevelopment projects, providing solid waste facilities and reviewing local land use regulations. The Meadowlands Master Plan includes large areas of open space and employs an innovative regional tax sharing program to hold municipalities harmless from any impacts to property tax revenues (New Jersey Meadowlands Commission, 2004).

3.5.3.4 Delaware River Basin Commission

In addition to the three regional planning areas, New Jersey also serves on the interstate Delaware River Basin Commission (DRBC), along with representatives from New York, Pennsylvania, Delaware and the federal government. The Delaware River Basin, or watershed, covers 14 of New Jersey's 21 counties—6 in North Jersey. Since its formation in 1961, the DRBC has been tasked with the protection and allocation of water resources in the Delaware River Watershed. While DRBC's oversight deals primarily with water resources, their planning efforts involve the protection of source waters, such as the control of floodwaters in the Paulins Kill Watershed in Warren and Sussex County (Delaware River Basin Commission, 2001).

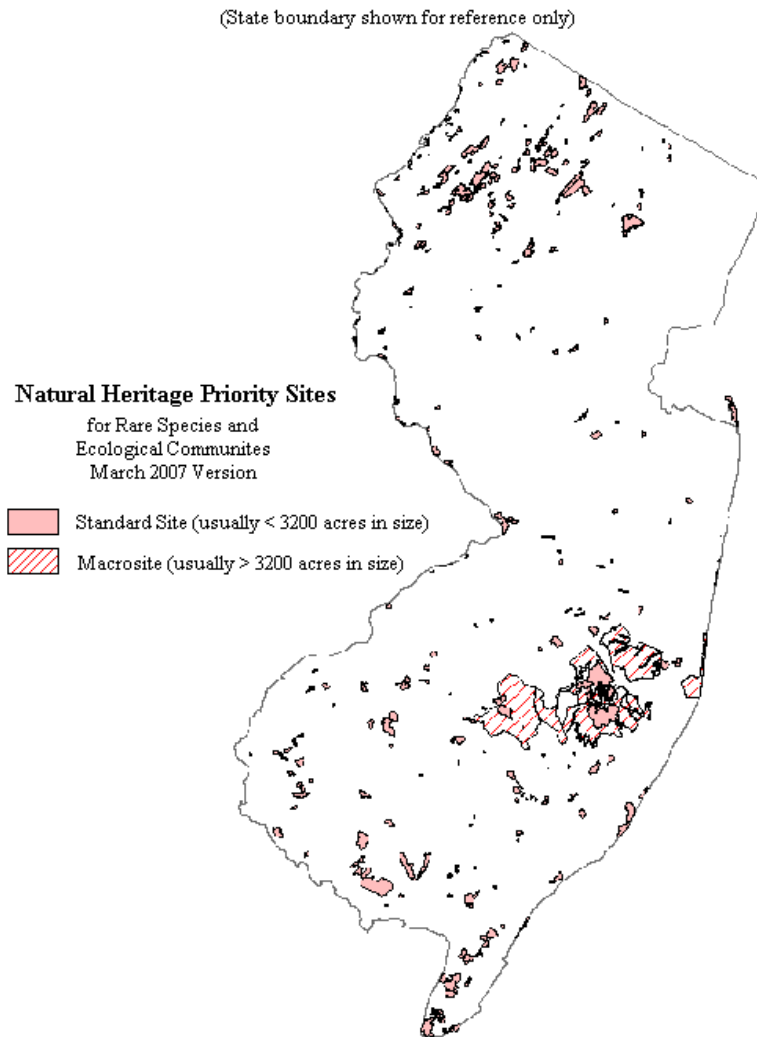
3.5.4 Local Planning and Regulatory Tools

Municipal home rule allows municipalities to control aspects of land use related to the protection of a municipality's "police powers," meaning the protection of the health, safety and welfare of its residents and property. Most land use policy decisions come from local zoning and subdivision regulations, which are enabled through the New Jersey Municipal Land Use Law (MLUL). Through this authority, municipalities have the ability to utilize different planning and regulatory tools to direct land use decisions. If used properly, these tools can assist in land preservation without the costs associated with acquisition.

3.5.4.1 Natural and Farmland Resource Inventories

The increasing accessibility of digital spatial data has given planners, policy makers, developers and the public the tools necessary to develop informed decisions with regard to preservation and development. Under the state's DEP, New Jersey's Natural Heritage Priority Program and Landscape Project identify important plant and animal habitat locations throughout the state. From the policy perspective, these tools can help to inform land preservation decisions. For developers, they can help to identify potential pitfalls early in the process to minimize costs throughout the project. Similarly, the USDA NRCS offers an online web tool, the "Web Soil Survey," that identifies soils throughout the state. Soil composition plays a large role in the natural and built environments based upon their ability to drain or retain water and nutrients. Informed planning of open space and acquisition programs requires the inventory of local soils. Misguided land preservation could result in the protection of farmlands with poor soils that are not suitable for farming. Soils unable to retain nutrients or water will require increased fertilization and irrigation, which can carry negative consequences to neighboring properties and water supplies. As successful farming requires the use of high quality soils, it is important for municipalities to allow soil type to inform preservation and development decisions. Municipalities are encouraged incorporate such information into formal local inventories of natural and farming resources, to inform their master plan and zoning ordinances.

Figure 3.5 New Jersey's Natural Heritage Priority Sites (2007)



NJ Natural Heritage Priority Sites Map (March 2007)—New Jersey Department of Environmental Protection

3.5.4.2 Low-density zoning

If used properly, low-density zoning can serve as a valuable planning tool to encourage land preservation. Zoning that requires substantially large lots, and permits developers to shrink some lots in a process known as “averaging,” may help to create higher density clusters while preserving larger tracts of natural lands. Misuse of low-density zoning, such as requiring minimum lot sizes that are fairly small (2-5 acres), can result in sprawl development that requires greater development of land to accommodate growth.

3.5.4.3 Density Transfer Tools

Density transfer programs involve the reduction of development density in one area in exchange for an increase in development density elsewhere. New Jersey’s Transfer of Development Rights (TDR) Program enables

municipalities to participate through the designation of “sending” and “receiving” areas. Developers can purchase development “credits” from a sending area or from the state’s TDR Bank, where they can be used in a receiving area to develop at increased density, while preserving in perpetuity the lands in the sending district where the credits were purchased. Similar, but not identical to the TDR program is the non-contiguous clustering tool. Non-contiguous clustering permits municipalities to enact ordinances that would permit developers to develop at high density on one property, while preserving another. TDR has been used successfully in the Pinelands region and Chesterfield and Burlington Townships in Burlington County. The Highlands TDR program has purchased properties for preservation, but has yet to designate receiving areas.

While less controlled than a TDR program, non-contiguous clustering can offer a tool that helps municipalities, developers, and large landowners work to maximize returns on investment on all sides. Contiguous clustering allows for the same type of development at the scale of a single site or set of adjacent sites (New Jersey Future, 2010). Legislation to improve clustering tools (A3761/S2608) passed the Legislature unanimously this spring and awaits the governor’s signature.

3.5.4.4 Exactions during the development review process

Municipal and planning entities responsible for reviewing development plans have the ability to negotiate requirements for public open space dedication as part of a project, or require a fee to go towards local preservation efforts. In granting a variance, zoning boards can exact agreements from a developer to require additional land preservation, installation of green infrastructure or other conservation projects to mitigate the impact.

3.6 Challenges and Opportunities

The North Jersey region’s ability to meet desired long term outcomes for natural lands will depend upon how it addresses the most pressing challenges and opportunities.

3.6.1 Present Opportunities

3.6.1.1 Multiple Benefits from Investment

Targeted land preservation can exact multiple benefits for communities and ensure a greater return on investment, which is especially important when preservation funding from all levels of government is limited. Using land as a form of green infrastructure in rural, suburban and urban communities can reduce the strain and cost of stormwater management, while also beautifying communities, providing recreation and raising property values. In urban areas, trees and other plantings can help to provide shade and control the local microclimate, reducing the costs exacted from increased use of air conditioning and the demand on the greater electrical grid. Preservation of land in rural areas provides wildlife habitat and recreation space, but can also protect water quality, which can then reduce treatment costs for municipalities and utilities.

One contemporary example of preservation funding that returns multiple benefits is New Jersey’s Blue Acres program. Blue Acres has recently come to the forefront of state land preservation, following the damage caused by Hurricane Irene in 2011 and Superstorm Sandy in 2012. Properties damaged from flooding and storm events on multiple occasions, deemed areas of repetitive loss, are eligible for purchase by the state. Acquisition of floodplain and coastal properties by the Blue Acres program presents an opportunity for New Jersey to connect large contiguous tracts of restored natural lands that will serve to reestablish natural wildlife corridors and provide scenic and recreational opportunities for residents, all while protecting the public from future extreme weather events.

While reduced preservation funding certainly presents a long-term challenge for the state's remaining natural lands, it adds motivation to invest preservation funds more strategically. Since open space preservation means something different to everybody, the partnerships that are established to pool resources also result in preserved land that can serve multiple needs. Tools like the Natural Heritage Priority Areas, Garden State Greenways, NRCS's Soil Mapper or the Nature Conservancy's Conservation Blueprint, allow conservation parties to target preservation priorities that serve multiple benefits, rather than buying property merely to prevent a particular development.

As another example, New Jersey's Endangered and Non-Game Species Program at DEP is presently pursuing a Connectivity Initiative to restore habitat connections. By examining spatial data of New Jersey's landscapes, DEP can identify areas where connections can be protected or restored to promote working ecological corridors. And by including partners like the federal and state transportation agencies, the initiative can lay the groundwork for implementation.

3.6.1.2 Strong Conservation Ethic

New Jersey's state and local preservation programs have traditionally been popular with residents, as voters have repeatedly approved state preservation program funding since the start of the Green Acres Program in 1961. Given that all of New Jersey's 21 counties and nearly half of the state's 565 municipalities (more than half of which are located in North Jersey) have preservation funding mechanisms in place, New Jersey residents value natural lands and the benefits they provide.

3.6.2 Present Challenges

3.6.2.1 Funding

The recent economic recession has impacted the willingness of federal, state and local leaders to continue to fund preservation programs. Some elected officials in particular may prioritize other political goals such as reducing taxes at the expense of preservation. Without available funding from the state to match local preservation programs, municipalities and counties may have less incentive to maintain their own programs. The New Jersey conservation community has communicated the benefits of preservation effectively across a broad spectrum of leaders and most media outlets, but perhaps additional new partnerships are needed, such as with insurance, health care and energy industries to show how well-planned conservation targets can help to reduce costs and increase efficiency.

3.6.2.2 Statewide Coordination and Strategic Planning for Preservation

An updated strategic plan for land use in New Jersey could help to lay the groundwork for well-informed open space preservation and development. Too often county and municipal governments rely upon a patchwork of local methodologies that can range from sound planning to political or merely a NIMBY-based desire to stop new development projects. By establishing open space and farmland preservation priorities strategically, counties and municipalities can more efficiently direct preservation funding to areas that will provide the most benefit. Integrating these priorities into land use plans and zoning ordinances can reduce development pressure and help ensure lands remain available for preservation. Adoption by counties of the State Strategic Plan Investment Framework offers a particularly promising opportunity to integrate preservation priorities with development priorities and infrastructure investments between state and local governments, and across state agencies.

3.6.2.3 Population Changes

Demographic change is not endemic to New Jersey. As gas prices continue to rise, people are realizing that the 90-minute commute is economically unsustainable, not to mention the health and social costs. The Baby Boomer and Millennial generations are rediscovering downtowns as a way to conveniently access needs and amenities. Renewed interest in urban environments presents a challenge to plan for and provide for adequate recreation, stormwater management and nutritional needs in cities. Reducing regulatory hurdles towards smart growth and green infrastructure in urban environments may help to address all three needs, while reducing long term costs. Providing acquisition funding and strong density transfer tools will also help. As discussed in the challenge section on funding, arguments for preservation and green infrastructure need to be crafted in a way that addresses multiple benefits, including public health and safety.

3.6.2.4 Planning and Regulatory Barriers to Open Space Preservation

Present planning practices and regulatory requirements can unfortunately work against informed natural lands preservation efforts. While zoning ordinances were originally established to protect the health, safety and welfare of residents and businesses, many zoning districts have become outdated and misguided. Multiple-acre “Rural” Zoning that is not very-low density or does not include options for lot-size averaging, clustering or other density transfers only encourages suburban sprawl at the expense of natural lands. The increased hardscape created by roads and other infrastructure to connect these communities only makes these problems worse, adding to increased stormwater loads and habitat destruction. Unfortunately, some of the planning solutions need to be strengthened with state support to guarantee their long-term efficacy. The New Jersey legislature recently passed A3761/S2608, a bill that strengthens municipal ability to implement non-contiguous clustering. This bill was unanimously passed in the Senate and House (with the exception of one abstention), and is presently awaiting approval from Governor Christie.

Transfer of Development Rights (TDR) programs are also an option for municipalities, but onerous requirements deters municipal implementation. While TDR has been successfully used in places such as Chesterfield, few other municipal success stories exist. A report by New Jersey Future recommended a reduction in requirements for TDR programs, streamlined planning review by state government, as well as offering expertise and resources to interested municipalities (New Jersey Future, 2010).

By making these tools readily accessible and user-friendly, municipalities could accomplish open space and recreation goals at a reduced cost compared to acquisition. In addition to land use tools, keeping information up to date with regard to electronic planning tools, such as the Garden State Greenways or the Natural Heritage Priority Areas will help to ensure that municipalities have the ability to make informed decisions when spending local preservation funds.

4 Desired Long Term Outcomes and Indicators to Measure Progress



Figure 4.1 Walking Trail at Natirar, in Peapack and Gladstone Borough (Somerset County Park Commission). (Staff Photo, 2011)

The following represents a synthesis of project team research and stakeholder input provided to date related to identifying a set of planning goals, outcomes and indicators for the Together North Jersey regional plan.

4.1 Long-term outcomes

- Maintain large, continuous areas of high quality farmland.
- Preserve open space natural areas and wildlife habitat by protecting lands that are vital to water resource management, including headwaters, aquifers, riparian areas, wetlands and floodplains, as well as protecting well-functioning ecosystems that provide plant and animal habitat.
- Improve access to local parks and recreation by connecting natural areas and parks with a network of greenways, trails, bike paths and sidewalks.

- Reduce potential impacts of climate change and increase community resilience to extreme weather events and rising sea levels by restoring flood plains to their natural function

4.2 Indicators

- Acres of high quality farmland preserved
- Acres of public use parks and open space per capita
- Acres of open space, greenways and natural lands preserved overall and proportion preserved in identified Priority Preservation Investment Areas
- Acres of flood plains returned to natural function
- Acres of wetlands converted to development

Measurable Outcome	Potential Indicator	Source	Available Scale	Time Period Available
Maintain large, continuous areas of high quality farmland.	Acres of farmland preserved	New Jersey SADC	State	Annually, from 1985-2013
			County	Annually, from 1985-2013
			Municipality	Annually, from 1985-2013
Improve access to local parks and recreation by connecting natural areas and parks with a network of greenways, trails, bike paths and sidewalks.	Acres of public use parks and open space per capita	New Jersey DEP Green Acres Program	County, Municipality	2002, 2007, 2012
		US Census Bureau	State, County, Municipality	Decennial Census, American Community Survey Estimates
Preserve open space natural areas and wildlife habitat by protecting lands that are vital to water resource management, including headwaters, aquifers, riparian areas, wetlands and floodplains, as well as protecting well-functioning ecosystems that provide plant and animal habitat.	Acres of open space, greenways and natural lands preserved overall and proportion preserved in identified Priority Preservation Investment Areas	County, State	Contingent upon completion of County Investment Frameworks	N/A
Reduce potential impacts of climate change and increase community resilience to extreme weather events and rising sea levels by restoring flood plains to their natural function.	Acres of flood plains returned to natural function	Under investigation	Under investigation	Under investigation
	Acres of wetlands converted to development	Changing Landscapes in the Garden State	County	1986, 1995, 2002, 2007

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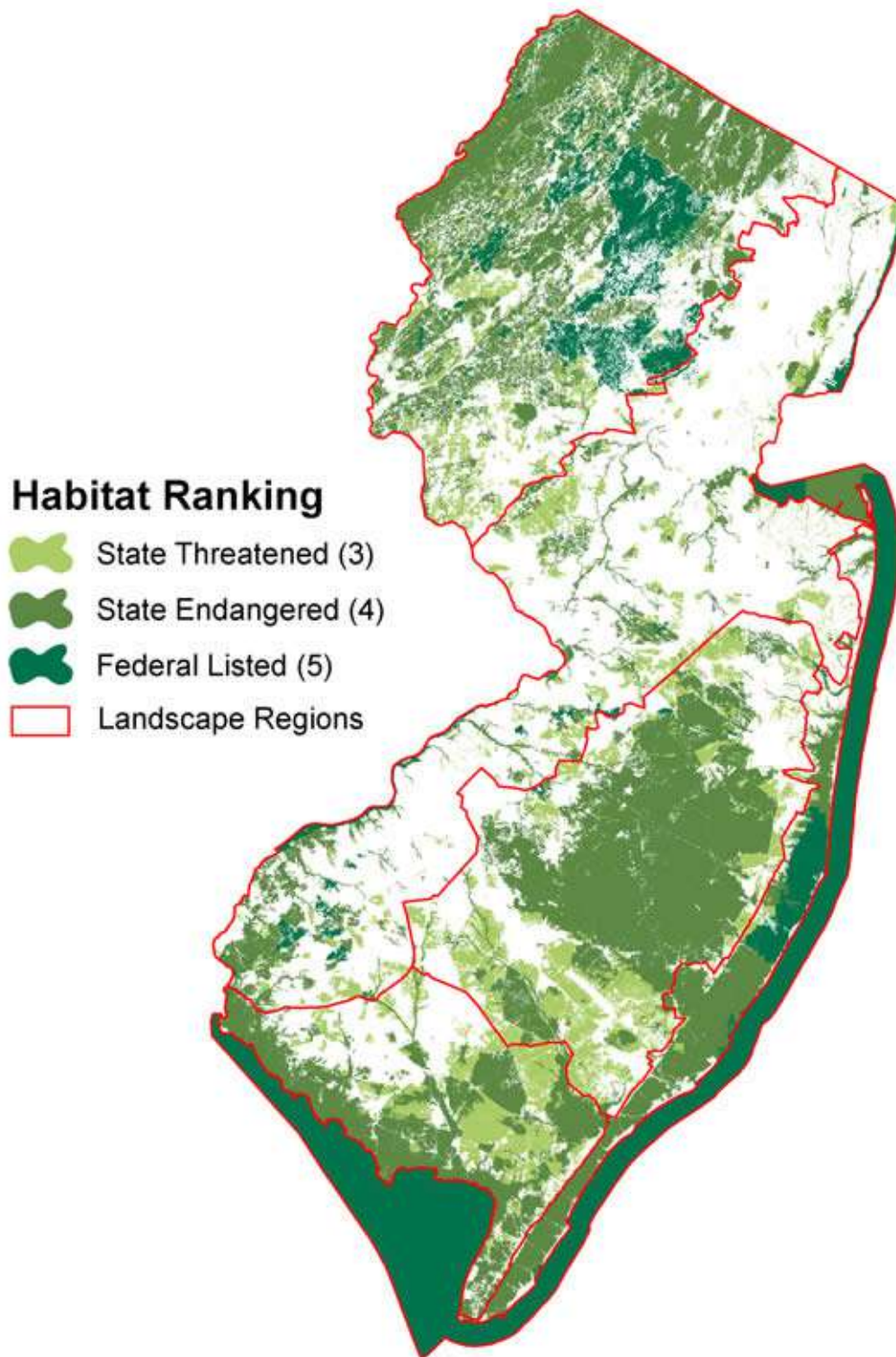
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6 Appendix:

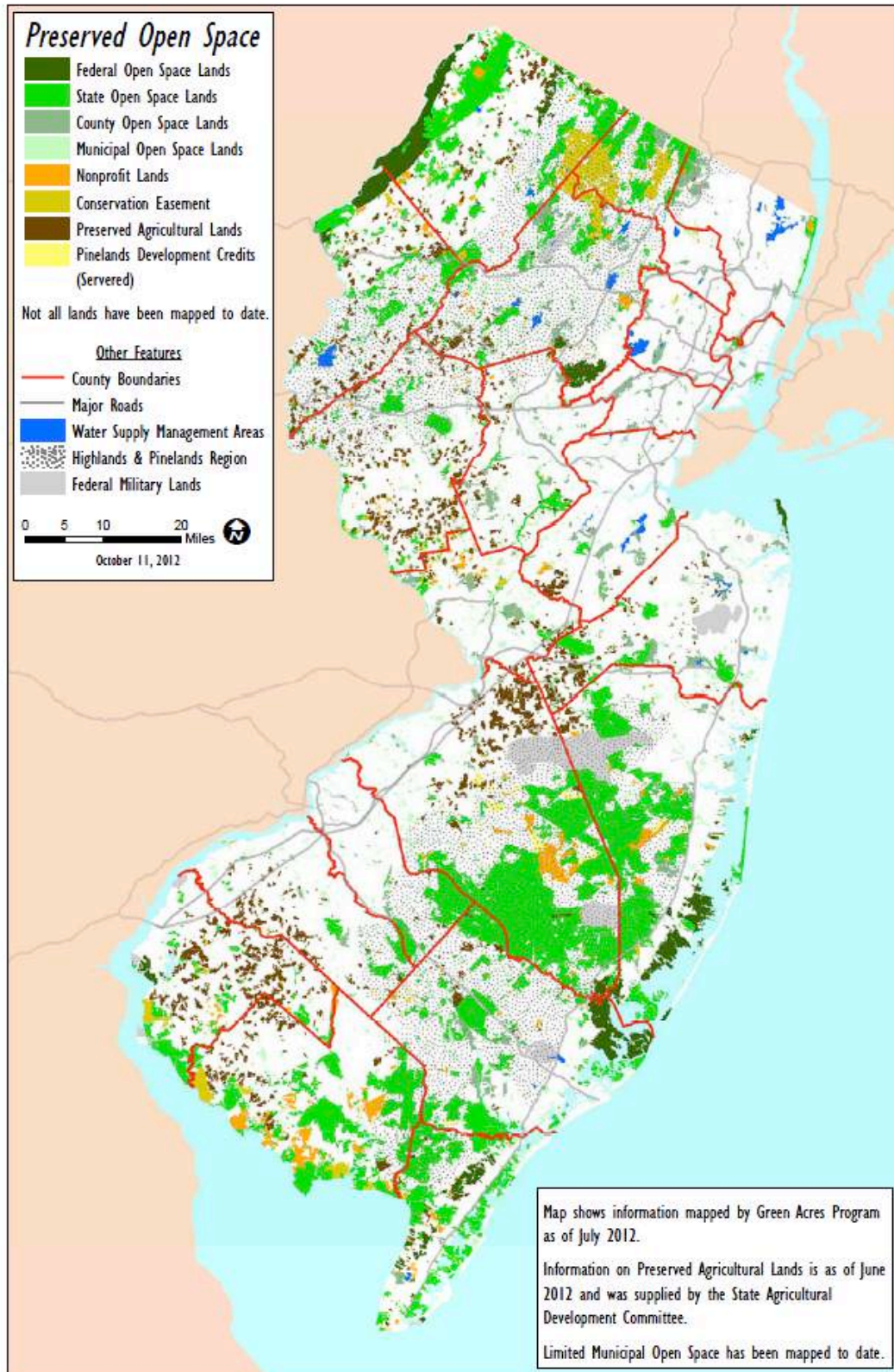
6.1 Appendix A: Agricultural Production in New Jersey

New Jersey Agriculture At a Glance 		
Aquaculture Angelfish Bluegill Brook trout Brown trout Comet Discus Eastern oysters Fathead minnow Hybrid striped bass Koi Largemouth bass Mummichog Northern quahog Rainbow trout Tilapia Triploid grass carp White sucker Yellow perch Various ornamental plants Christmas Trees Canaan fir Fraser fir Concolor fir Norway spruce Blue spruce White pine Scotch pine Field Crops Barley Corn Hay Potatoes Soybeans Sweet Potatoes Winter Wheat Floriculture/Nursery Aquatic Plants Bedding/Garden Plants Bulbs Chrysanthemums Foliage Geraniums Hostas Impatiens Lilies Marigolds New Guinea Impatiens Pansies Petunias Poinsettias Potted Plants Shrubs Sod Trees	Fruit Apples Blackberries Blueberries Cantaloupe Cranberries Nectarines Peaches Raspberries Sour cherries Strawberries Watermelon Herbs Arugula Basil Cilantro Dill Marjoram Methi Mint Oregano Parsley Sage Tarragon Thyme Livestock/Poultry Alpaca Bees Bison Cattle Chickens Cows, beef and milk Deer Donkeys Ducks Elk Emus Geese Goats, meat and milk Horses Llamas Mules Ostriches Pheasants Pigeons Pigs Rabbits Quail Sheep Turkeys Specialty Products Asian Fruits and Vegetables Baby Arugula Baby Spinach Chestnuts Corn Stalks Cut Flowers Garlic Grapes and Wines	Hay Honey Indian Corn Maple Syrup Mums Popcorn Shell Eggs Straw Tomatillos Vegetables Asparagus Beans, green, pole and snap Beets Bok Choy Broccoli Broccoli Raab Cabbage, red, green, Chinese, Savoy Cauliflower Celery Collards Corn, sweet Cucumbers Dandelion Greens Eggplant Eggplant, Sicilian Escarole Fennel Horseradish root Kale Kohlrabi Leeks Lettuces Mustard greens Okra Onions Parsnips Peas Peppers Pickles Potatoes Pumpkins Radishes Rhubarb Rutabaga Shallots Spinach Squash Sweet Potatoes Swiss Chard Tomatoes Turnips Turnip Greens

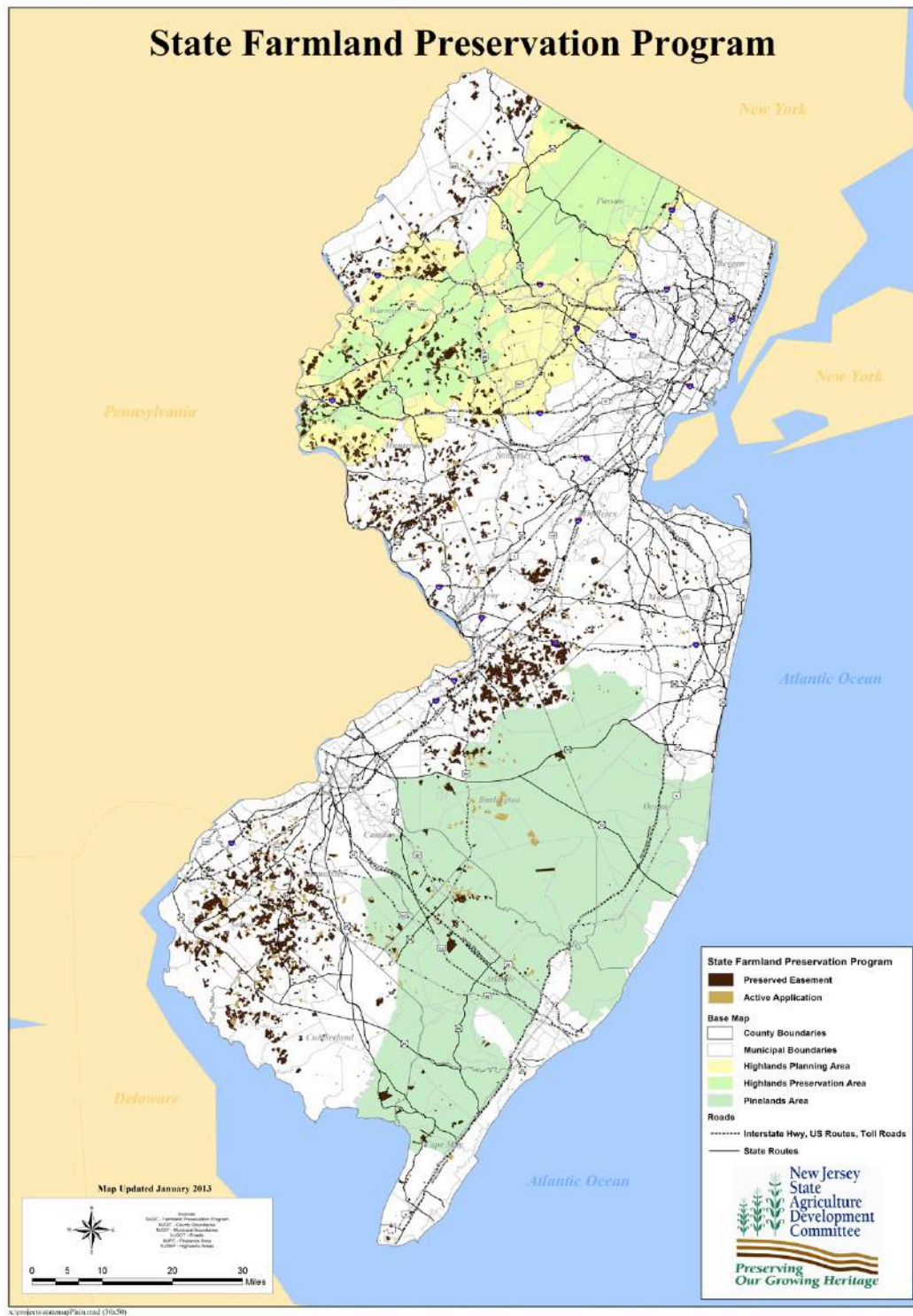
6.2 Appendix B: Landscape Project Map



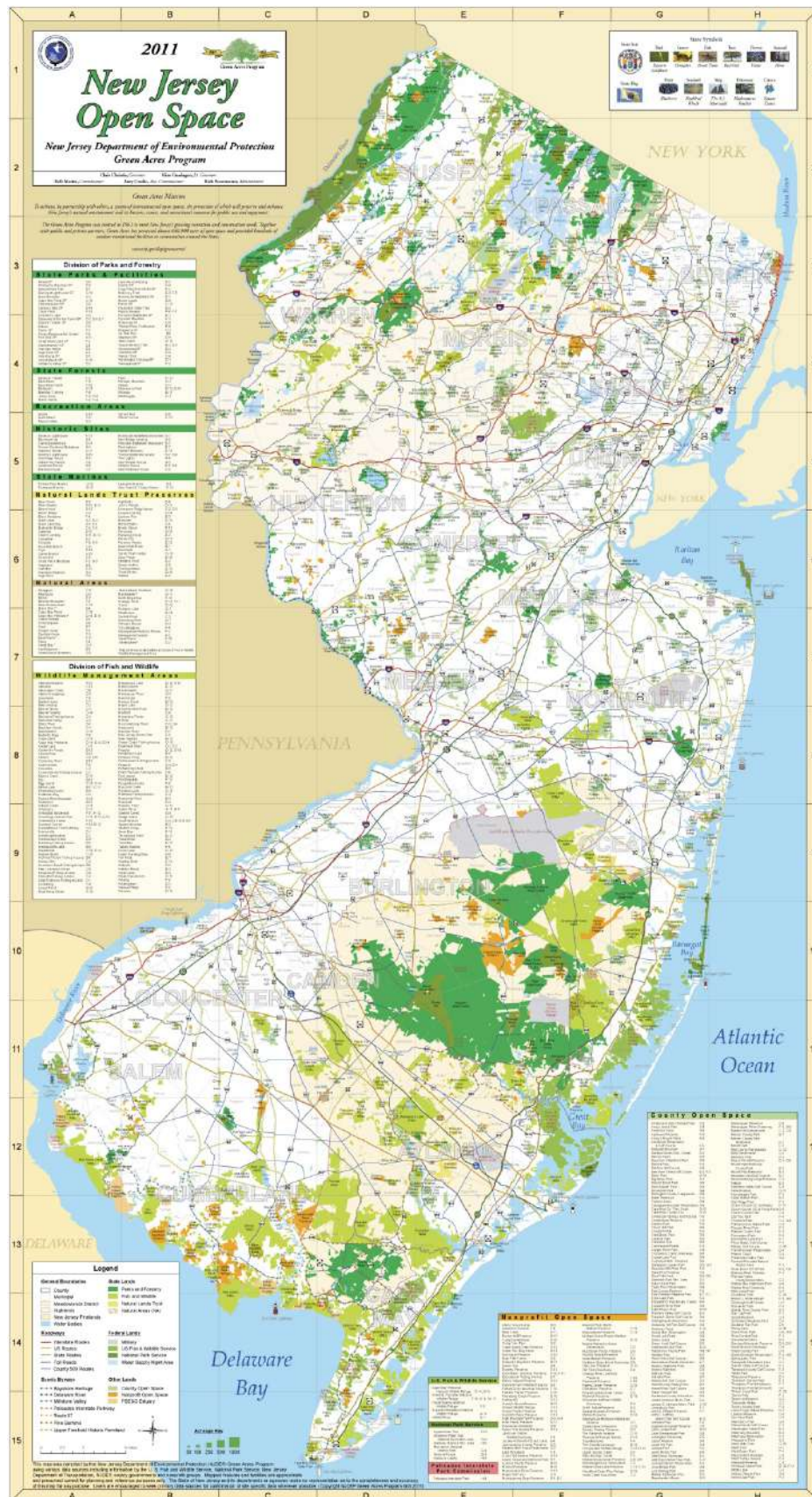
6.3 Appendix C: Preserved Open Space Map (October 11, 2012)



6.4 Appendix D: Farmland Preservation Map

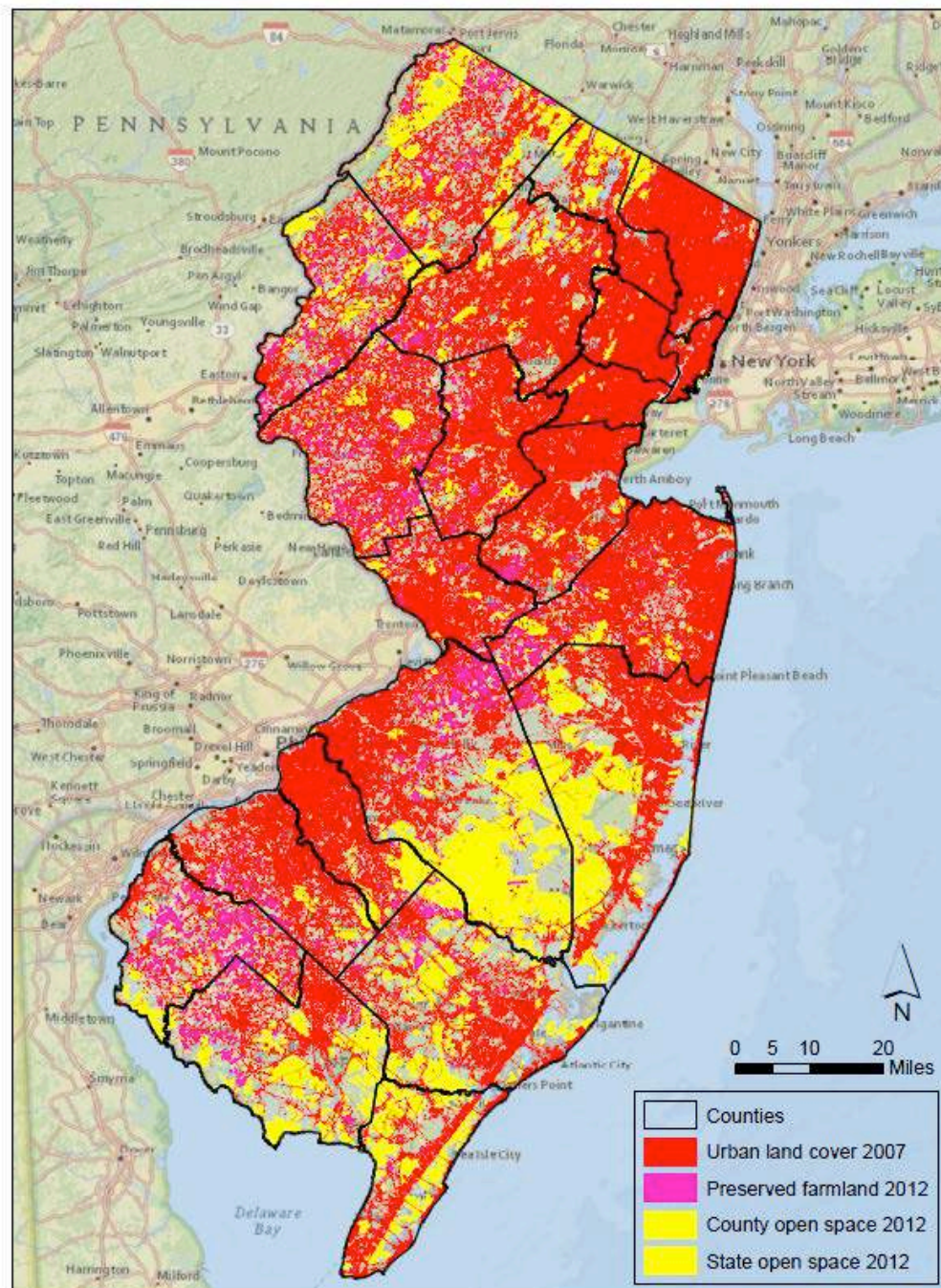


6.5 Appendix E: 2011 New Jersey DEP Green Acres Map

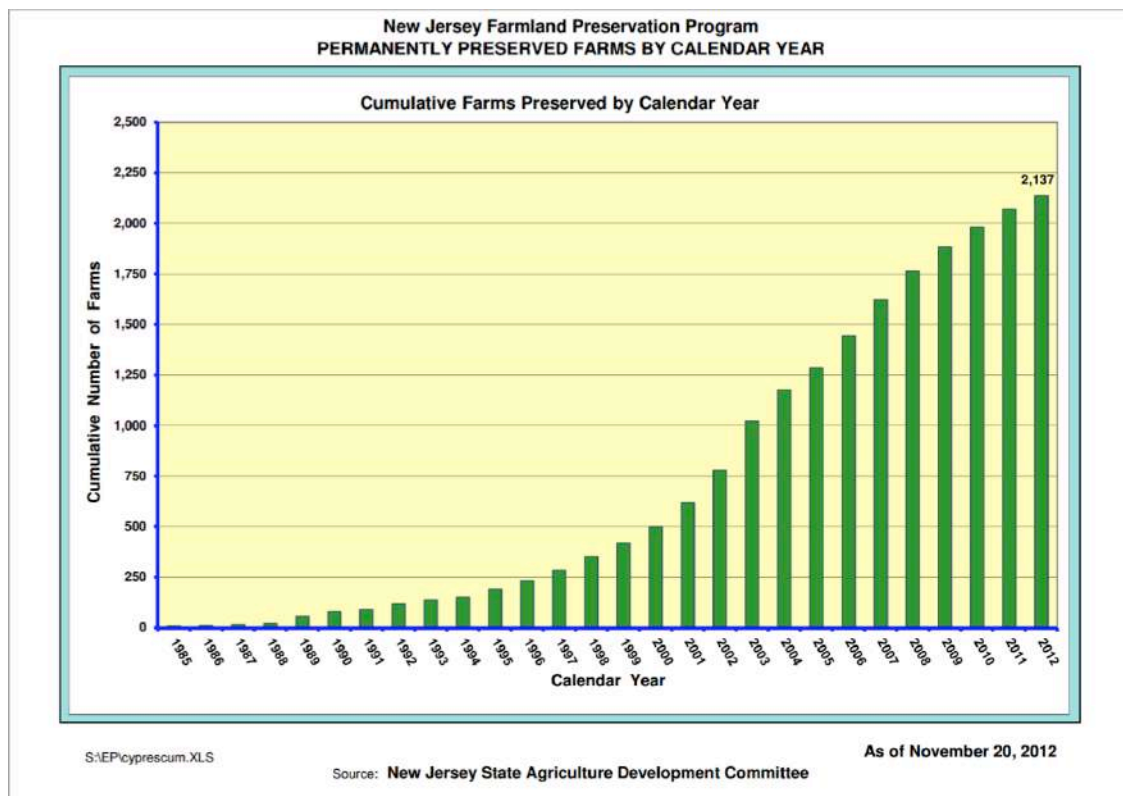
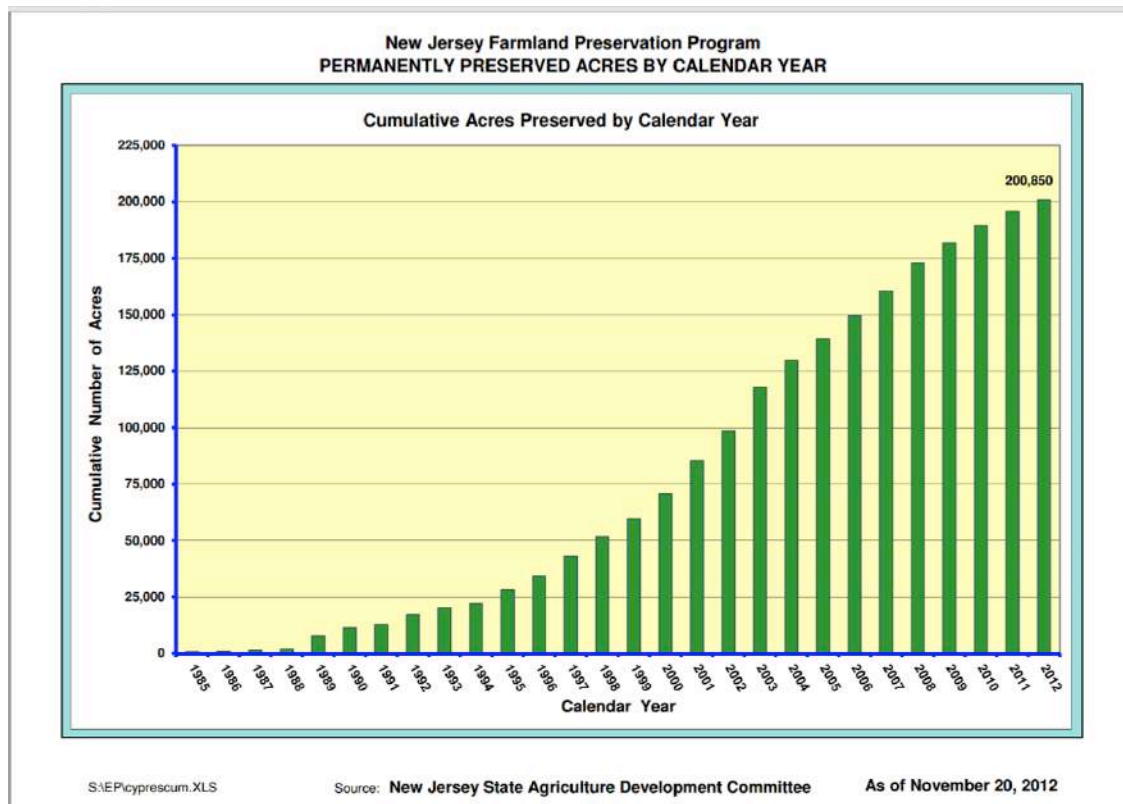


6.6 Appendix F: Preserved /Urban Areas Map (2007-2012)

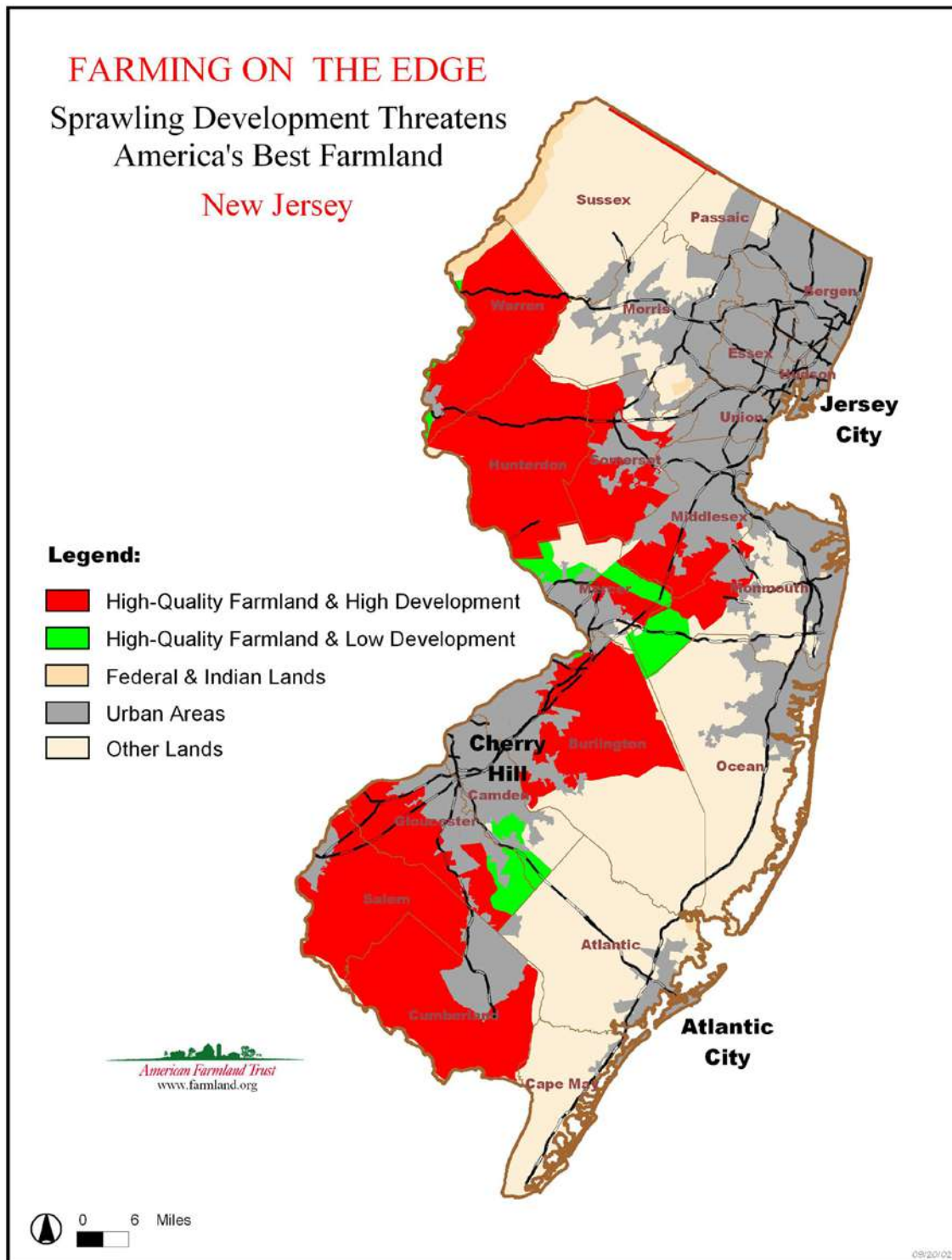
Preserved Open Lands Vs Urban Area



6.7 Appendix G: Historic Farmland Preservation Trends (Statewide)

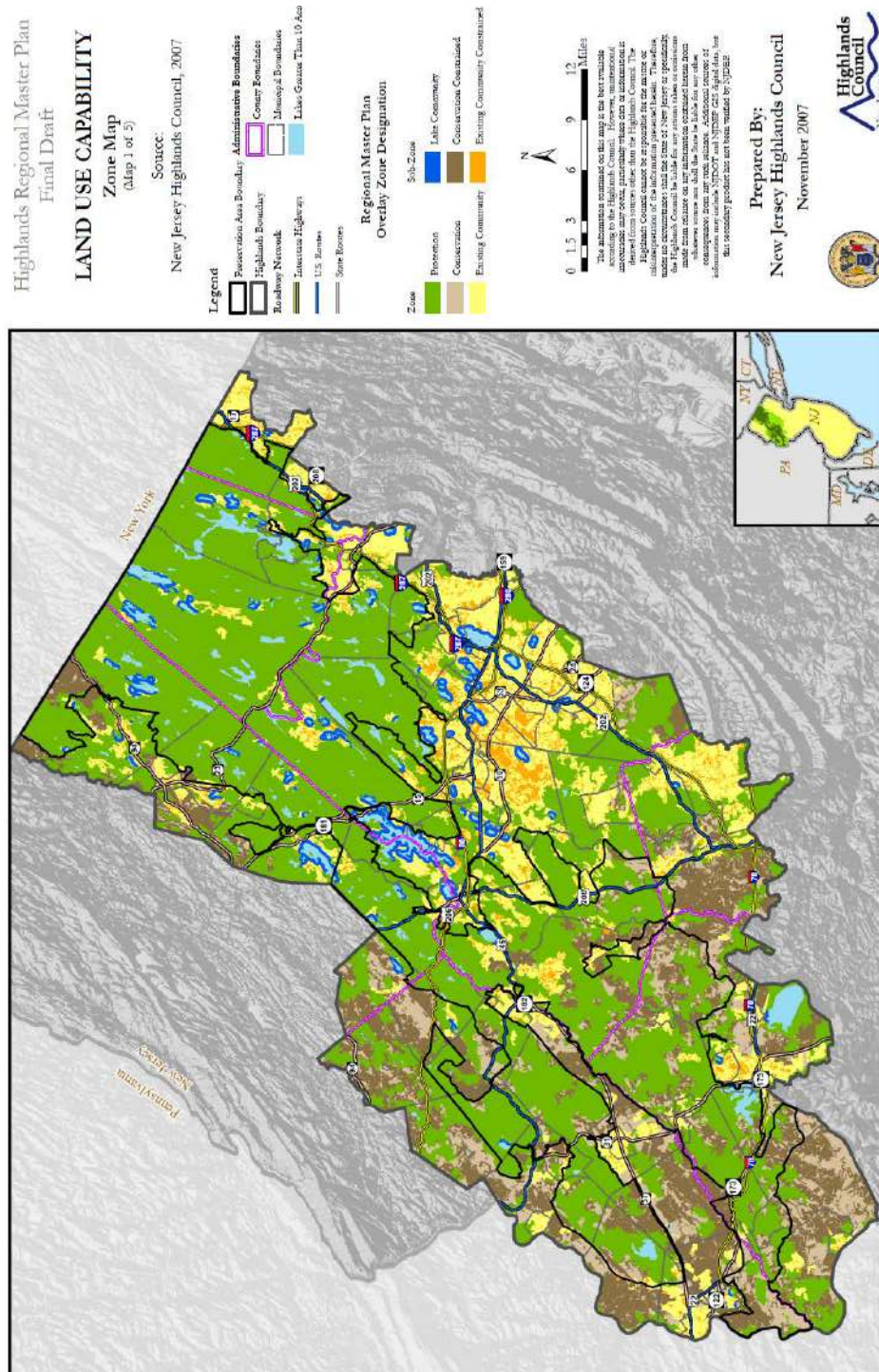


6.8 Appendix H: Farmland Quality and Development Area Pressure (2002)



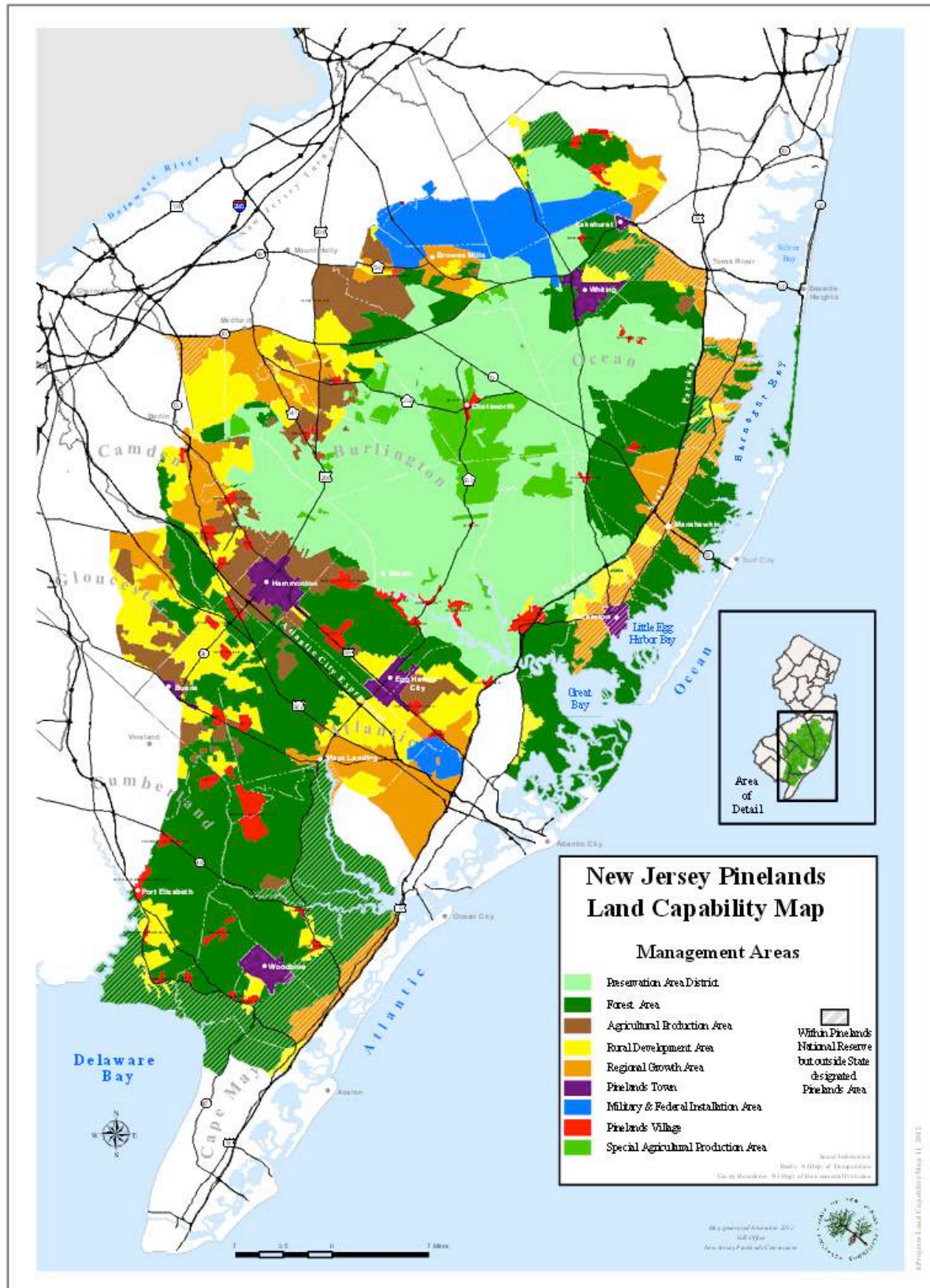
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6.10 App



endix J: Highlands Management Area

6.11 Appendix K: New Jersey Pinelands Management Areas



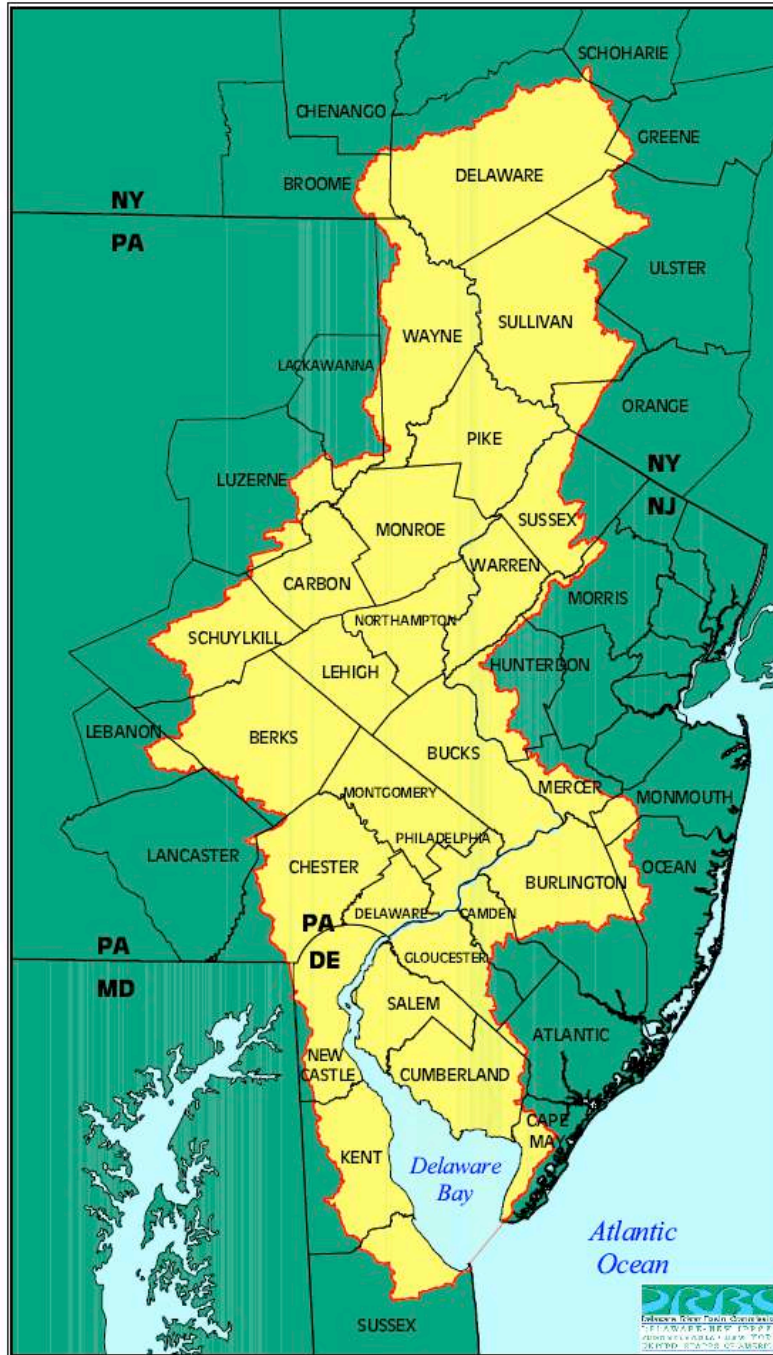
6.12 App



endix L: Meadowlands Management Area

Basin

Counties within the Delaware River Basin



**6.13 Appendix M
Delaware River**

6.14 Appendix N: Long-term Outcomes, Ranked by Votes

Housing	
More Housing is created through redevelopment and reuse near transit	27
Amount, type and price levels of housing matches the demand for housing	22
Neighborhoods are safe and people feel secure in their investment	22
Residents have access to good schools and other public services and to transit and job opportunities nearby	14
A significant share of new housing is compact and energy-efficient	12
Problem properties are effectively addressed	10
Write-in: Housing proximity to good education opportunities	2
Land-Use and Urban Design	
Increased number of neighborhoods considered walkable, bikable, and transit friendly	31
More job and housing growth in areas with compact development, including centers	21
Shifts away from development on greenfields and towards brownfield/infill sites	21
More job and housing growth in transit districts with high capacity transit service	20
More mixed uses in developed areas	14
More multifamily units in the housing mix	6
Write-in: Mixed income communities	6
Transportation	
Increased reliability and interconnectivity of transportation service	27
Transformation of opportunity poor areas into diverse neighborhoods offering access to good schools and jobs, fresh food, and safe/health areas to recreate	24
More transportation infrastructure in a state-of-good repair and resilient to climate change	23
Decreased vehicle miles traveled per capita	15
Increased population of low income households within an acceptable transit commute of major job centers	15

Decreased adverse transportation related safety and health impacts	6
Write-in: Need for redundancy	2
Write-in: Sustainable source of transportation funding on federal and state levels	1
Water & Air	
Development and redevelopment are focused in areas with sustainable water supply and wastewater capacity at efficient densities	29
The region's designated growth areas have needed water infrastructure and capacity	21
The region and its neighborhoods enjoy healthy air and meet federal and state air quality standards	18
Flood damages are avoided and floodplains remain or become undeveloped	16
Water resources and riparian areas are protected and restored	8
Water infrastructure provides modern levels of service at low costs	7
Water supply is apportioned fairly for all uses and for ecological systems	2
Write-in: Everyone in the region regardless of income, race, etc., has access to healthy air and water	2
Natural Lands	
A network of high-quality natural, agricultural, and recreational lands is protected	36
Natural lands are connected via greenways and bike paths, trails and sidewalks	26
The systems of natural lands and parks supports environmentally healthy and natural systems	24
The region maintains large, contiguous areas of high quality farmland	15
The region's residents are close by parks and greenways	13
Climate & the Environment	
Communities less vulnerable and more resilient to the impact of extreme weather events	27
A greater use of renewable energy sources in all sectors	20
Increased number of energy efficient buildings	18
Fewer greenhouse gas emissions from the on-road sector	15

Decreased energy use per capita and related emissions	13
Fewer greenhouse gas emissions from the industrial and commercial sectors	9

6.15 Appendix O: Opportunities and Threats, Ranked by Votes

Housing	
Opportunities	
Market and cultural shifts toward walkable, bikable, compact places	30
Redevelopment opportunities in compact and infill	29
Public/private partnerships and innovative financing mechanisms	10
Urban, suburban and rural centers, including transit hubs	9
Mt. Laurel legal history and platform	3
Talent in the communities - CDCs, neighbors and neighborhood groups	3
Threats	
High property taxes, driving affordable housing to less connected places	28
Zoning issues	22
Displacement caused by gentrification	10
National/Regional economic uncertainty	9
High cost to produce housing	8
Decreasing funding for affordable housing subsidies	6
Land-Use & Urban Design	
Opportunities	
Demand for living in compact centers, places with land available for redevelopment (Infill, brownfields, greyfields)	28
Existing transit networks	24
Changes in demographics driving trends	12
Diversity of land types creates quality of life opportunities	4
NYC's global economic market	3

Threats	
School formula and ratables chase makes for poor land use decisions and creates competitiveness	34
Aging infrastructure (\$)	29
Anti-regional planning attitude	9
Job losses	5
Conflicting Regulations (DEP, Scale)	2
Transportation	
Opportunities	
Transit Network Exists; capitalize on this (passenger and freight)	22
Cultural shifts/demographics, Proactive community engagement/education (foster "ownership" of NJ)	20
Redevelopment opportunities	18
Public/private partnerships and innovative financing mechanisms	12
Technology (advancements and leverage what we have already)	7
Better use of breadth of planning/implementation tools in order to create opportunities for linking transportation and land use	1
Threats	
Fiscal - property taxes, unsustainable funding sources, municipal constraints/sprawl (short term), ROW acquisition	34
Cultural & Ideological Battles; "NIMBYism"; Political Climate	21
Planning processes not as integrated as they could be and planning and implementation processes so complicated, almost impossible to move forward/ahead, environmental clean up....potentially unlimited costs/issues	20
Climate & Weather Vulnerability	2
Increase of freight at the ports = increase truck traffic/air quality issues	2

Water & Air	
Opportunities	
Urban redevelopment creates potential for water resource and infrastructure improvements	38
Workforce development for environmental protection/mitigation/restoration	21
Cumulative impact ordinances (e.g. Newark)	11
Diesel mitigation funded through offset payments	4
Threats	
Multiple urban infrastructure needs - ratepayer backlash	31
Air pollution from other states - NJ can't control	17
Mistrust of government decisions	16
Sea level rise	5
Local government taking water utility reserves and revenues	2
Natural Lands	
Opportunities	
Use existing public lands better - for more uses ("green streets, better public access, rail/trails, urban food productions, etc.)	35
More strategic conservation preserve "high value" land - like to prevent flooding	20
Encourage municipalities to coordinate land preservation park development thru Sustainable Jersey	12
Build constituency for urban parks (from changing demographics)	12
Funding - stable state source and non-traditional	8
Threats	
Poor economic climate: low funds for open space and parks and farmland and lack of willing sellers since Prices are low	31

Lack of sustainable funding	25
Disconnect of people (kids) with nature	16
Disjointed State regulations (inhibit trails along rivers, etc.)	11
Development, transmission lines fragment natural lands and farmland	1
Climate & Environment	
Opportunities	
Shifting market trends toward transit - friendly lifestyles/communities	31
Leveraging emerging technologies	21
Greater awareness among younger generations	17
Growing Solar/Renewable Industry (Jobs)	6
Leadership training and education	1
Threats	
Antiquated (electric grid & transportation) infrastructure	26
Mismatched economic incentives (gas tax)	24
Political Polarization/Mistrust of Government	17
Unsupportive legislation (State & Local)	13