

Natural Resource Inventory

Borough of Flemington

Adopted March 15th, 2010

Flemington Borough Environmental Commission

Jeffrey Doshna, Chair

Brian Budney

David Cohn

Alexander Duran

Erica Edwards

Bob Flisser

Marc Hain

Brooke Liebowitz

Jay Makuch

Karen Walsh

Table of Contents

Attachments.....	4
Executive Summary.....	5
Plan Methodology.....	5
Inventory Findings.....	5
Planning, Development, and Conservation Findings.....	5
Environmental Resource Findings.....	6
Key Recommendations.....	7
Section I. Resource Planning and Resource Protection Overview.....	9
1.1 Introduction.....	9
1.2 Environmental Resource Regulations & Planning Policies.....	9
1.2.1 The New Jersey Municipal Land Use Law.....	10
1.2.2 The New Jersey State Planning Act.....	10
1.2.3 New Jersey Stormwater Management Rules.....	10
1.2.4 The Highlands Water Protection and Planning Act.....	11
1.2.5 The Hunterdon County Woodland Conservation Plan.....	11
1.2.6 The State Route 31 Land Use and Transportation Plan.....	12
1.2.7 Farmland, Open Space and Historic Preservation Programs.....	12
1.2.7.1 Historic Preservation.....	13
1.2.7.2 Green Acres Program.....	13
1.2.7.3 Flemington Borough Shade Tree Commission.....	14
1.2.7.4 Open Space, Farmland and Historic Preservation Trust Fund.....	14
1.3 State Planning Area Boundaries or Designated Use Areas.....	15
1.4 The Flemington Borough Master Plan.....	15
1.5 Flemington Borough Zoning and Development Ordinances.....	16
1.6 Flemington Borough Resource Protection Ordinances.....	16
1.6.1 Soil Erosion and Sediment Control.....	17
1.6.2 Stormwater Management.....	17
Section II: Environmental Resource Inventory.....	18
2.1 Introduction.....	18
2.2 The Ecological and Human Health Reasons for Identifying and Protecting Natural Resources.....	18
2.3 Base Map – Roads and Tax Parcels.....	19
2.4 Bedrock Geology.....	19
2.5 Bedrock Aquifers.....	20
2.6 Soils.....	21
2.7 Steep Slopes.....	21
2.8 Surface Water.....	22
2.11 Flood Zones.....	23
2.12 Land Use/Land Cover.....	24
2.13 Existing Open Space and Preserved Lands.....	25
2.13.1 Tuccamirgan Park.....	25
2.13.2 Green Acres Park.....	25
2.13.3 Reading-Fleming Intermediate School Grounds.....	25
2.13.4 Memorial Park.....	26
2.13.5 County/Flemington Park.....	26

2.14 Shade Trees and Residential Resource Assets.....	26
2.15 Known Contaminated Sites.....	26
2.15.1 Groundwater Contamination Areas (CEA):	27
2.15.2 Deed Notice Areas:	27
2.16 Municipal Water Supply Issues.....	28

Attachments

Map 1.....	Base Map
Map 2.....	Bedrock Geology
Map 3.....	Bedrock Aquifers
Map 4.....	Public Wells & Wellhead Protection Areas
Map 5.....	Soils
Map 6.....	Steep Slopes
Map 7.....	Surface Water Features & Freshwater Wetlands
Map 8.....	Flood Zones
Map 9.....	Existing Land Use
Map 10.....	Open Space
Map 11.....	Known Contaminated Sites

Executive Summary

The Flemington Borough Natural Resource Inventory (NRI) presented herein is a comprehensive compilation of text, maps and geographical information system (GIS) data that fully describe the Borough's key environmental resources. However, as well as presenting factual information concerning these resources, this NRI also provides information and guidance pursuant to the protection, preservation and conservation of these resources. The primary intent of this document is the objective and accurate presentation of resource spatial and statistical information in a framework that assists the Borough in making planning decisions. In this context, the NRI is intended to serve as a foundation for the Borough's Master Plan and provide critical data used in the crafting of development related ordinances.

The document herein is intended as the preliminary effort by the Environmental Commission to document environmental resources. Plans for the future include develop an Environmental Resources Management Plan containing regulatory and non-regulatory goals, objectives, and activities designed to preserve, enhance, maintain and restore Flemington Borough's environmental resources and a Vulnerability Assessment that ranks and identifies every parcel in the Borough with respect to its sensitivity to disturbance or development as based on the presence of site-specific resources and resources of regional significance.

The document is divided into the following two sections:

Section I. A Resource Planning and Protection Overview containing descriptions of the current zoning, land development, open space planning and resource protection ordinances and regulations.

Section II. A NRI consisting of the GIS maps, data, narratives, illustrations and diagrams locating and describing the Borough's natural and cultural resources.

Plan Methodology

Digital mapping information (GIS) was obtained primarily from the NJDEP GIS Data Web Site, utilizing the iMap interface. Other geospatial data were taken from existing published planning documents, specifically the July 1997 Master Plan of the Borough of Flemington, amendments, and related documents.

Inventory Findings

Flemington Borough is similar to many long-settled town centers in New Jersey. Most parcels have been developed for quite some time and there remain only a handful of undeveloped open spaces primarily the spaces have been preserved as parkland. Another significant environmental is a large inventory of mature shade trees. As most development projects in the Borough are re-development projects, reduction of impervious surface coverage, planting of appropriate tree species and landscaped buffers are the primary means by which environmental quality is maintained.

Planning, Development, and Conservation Findings

Local Population: According to the 2000 US Census of Population and Housing, the population of Flemington Borough was 4,200. This represents a modest increase from the 1990 US Census estimate of 4,047. This population will most likely remain stable for the foreseeable future, as there are no large parcels of land available for residential development.

Borough Development Patterns: Most if not all development in Flemington Borough has been of a redevelopment nature; such trends are expected to continue in the future.

Land Use: The existing land use survey shows a land use pattern typical of an historic town: A largely grid-oriented system with a commercial main street and a long development history spanning many different architectural eras. The existing land use pattern also reflects the Borough's role as the County seat of Hunterdon. The Central business district area contains concentration of retail, service and office uses which serve the numerous County facilities along Main Street. Of great importance to the borough's commercial viability but more indicative of post-war suburban development are the Liberty Village and Turntable Junction retail outlets in the southwestern portion as well as the concentration of retail, service and office uses near the Route 12 and Route 31/202 traffic circles. The remainder of the Borough is comprised of a balance mix of single and multi-family housing including apartments and townhouses. The Borough is virtually entirely developed and this is reflected in the shift from the development of vacant land to some redevelopment over the past fifteen years. Finally the little remaining vacant land usually has environmental constraints that preclude or severely limit its development.

Open Space Preservation Efforts: Currently Open Space funds are mainly dedicated to historic preservation efforts at Fleming Castle. The Environmental Commission believes Open Space funds are an excellent source of funding opportunities for future environmental projects.

State Planning: The Borough of Flemington has been designated as a Town Center by the New Jersey Department of Community Affairs' Office of Smart Growth. Under the State Development and Redevelopment Plan, Flemington Borough is thereby identified as an area for growth.

Environmental Resource Findings

Climate: The climate in Flemington Borough is categorized as continental, and has an average annual precipitation of 45-46 inches. Winter high temperatures average 28-32 degrees Fahrenheit (°F) with summer high temperatures averaging 69-73 °F.

Geological Resources: The Borough is entirely located within the "Piedmont Physiographic Province" of New Jersey and is primarily underlain by sedimentary units comprising the Passaic Formation in a general

northeast to southwest plane. A small portion of the northwest section of the Borough is underlain by an intrusion of the Orange Mountain Basalt Formation. The topography is generally characterized as gently rolling. The majority of Flemington Borough is assigned a Zone 1 Radon Rating from the EPA (see EPA Map of Radon Zones at <http://www.epa.gov/radon>). The Zone 1 rating indicates the highest potential (greater than 4 pCi/L) for radon.

Steep Slopes: The Borough has a topographic variation common the County but lacks the steeper hills found in the surrounding municipalities. The topography in the Borough ranges from elevation 260' on the western side of the Borough to 160' along Route 12 and 140' at Route 31 at the northeast corner. This is a sufficient change in elevation to create spectacular views from the western edge of Flemington at the cemeteries. Only a handful of parcels contain steep slopes of over fifteen percent, with none over 25 percent. Of those containing steep slopes, most are already contained within open spaces, primarily parks and cemeteries.

Aquifers: Flemington Municipal water is drawn exclusively through a series of municipal wells. As detailed elsewhere in this inventory, environmental hazards have been identified and steps are being taken to remediate the situation. This remains a critical concern for the Borough.

Streams: At the Southwest border of the Borough, lie Walnut Brook and a tributary which are both part of the First Neshanic River sub-watershed. Significant stream restoration projects are currently underway along the Walnut Brook. Bushkill Brook runs along the northern boundary of the Borough. A tributary to Bushkill Creek is located near at the east-central boundary of the Borough, north of Emery Avenue. All streams in the Borough are designated as FW2-NT.

Wetlands and Flood Zones: Although not obvious, floodplains have an impact on the Borough. In the southwest corner of Borough, there is an extensive floodplain, which includes a floodway (Main flood channel) and a 100-year floodplain. The amount of till allowed is regulated by the NJ Department of Environmental Protection through its Flood Hazard Area (FHA) permitting process. Construction limitations are also imposed by the Federal Emergency Management Agency (FEMA) and the state Uniform Construction Code. Of lesser significance are the 500-year floodplains which are just found in the extreme northern end of the Borough.

Wetlands are generally found at the municipal boundaries to the north and south of the Borough. The only mapped wetland wholly contained is within Tuccamirgan Park, a protected Green Acres/Open Space park in the Borough. While not officially mapped, wetlands have been identified in the Youngs Drive and Allen Street area. Development in and around freshwater wetlands is also regulated by the NJ Department of Environmental Protection.

Key Recommendations

Provide the opportunity for economic success and sustainability, while protecting the resources vital to the quality of life of the residents of Flemington Borough and the habitat needs of flora, fauna and wildlife.

Protect to the fullest extent practical well head areas and areas of significant groundwater recharge in order to ensure ample, clean potable drinking water. Implement measures that decrease the opportunity for the generation and release of point and non-point source pollutants.

Maintain, restore or improve, as needed, the quality of streams, ground water, air, soil, and overall quality of life.

Provide more opportunity for green spaces in residential neighborhoods

Support and enhance the work of the Flemington Borough Shade Tree Commission

Use Open Space funding for environmental projects within the Borough.

To bring these goals to fruition will require the implementation of both long-term and short-term resource management measures as defined within a framework of Borough ordinances and initiatives.

Section I. Resource Planning and Resource Protection Overview

1.1 Introduction

Flemington Borough is located in Northwestern New Jersey in the approximate center of Hunterdon County. The Borough of Flemington, which is the Hunterdon County Seat and its oldest community, is completely surrounded by Raritan Township. The Borough is small in area, covering 1.07 square miles.

The Flemington-Raritan area has historically been the center of growth in the county, dating back to the time of the first European settlers in the early 1700s. The South Branch of the Raritan River helped spur this early growth, serving as a vital transportation corridor. Route 31 historically served as another important north/south transportation route from the area's rural farmlands to nearby centers of trade and commerce. Later, the development of railroad connections provided the area important access and served growing industrial development.

Considerable population growth and development in the surrounding Raritan Township have continued over the past two decades. The Borough's and the County's close proximity to the New York and Philadelphia metropolitan areas has made this area an attractive location for residential housing. Suburban commercial development has followed this residential growth extending along major roadway corridors of Routes 31 and 202. The environmental impact of development in surrounding Raritan Township cannot be ignored. As a result, agricultural and industrial uses have diminished under this growing residential and commercial pressure.

The NRI presented herein provides a comprehensive review of Borough resources. It consists of a detailed compilation and explanation of the most recent environmental resource and anthropomorphic data, set in a framework that highlights and reflects the Borough's important and sensitive environmental features, cultural resources and areas holding historic or heritage value. The identification of these features and resources will enable Flemington Borough, as well as an applicant seeking the Borough's approval for a proposed land development project, to more easily identify any sensitive ecological, aesthetic and cultural features and take the correct measures in planning, designing and implementing land development projects. The following sections summarize the planning and regulatory provisions that are currently in place to protect the Borough's natural resources. These provisions include current zoning, land development, open space planning and resource protection ordinances and regulations.

1.2 Environmental Resource Regulations & Planning Policies

New Jersey has one of the most comprehensive sets of environmental regulations in the nation and a long tradition of mandated planning procedures. The following

sections summarize state and local environmental regulations directly and indirectly pertaining to natural resource protection in Flemington Borough. Before preparing this document, related materials, data and maps obtained through Borough, County and State sources were reviewed. This review was conducted in order to identify natural resource data gaps and policy or regulatory inconsistencies.

Additional referenced sources included planning and resource protection information contained in the Flemington Borough Master Plan, the current zoning and development ordinances, and resource protection ordinances. Additional information was obtained from several state and regional sources including the US Environmental Protection Agency (EPA), the US Department of the Interior, the New Jersey Office of Smart Growth and the New Jersey Department of Environmental Protection (NJDEP), Hunterdon County Soil Conservation District (SCD), the Hunterdon County Planning Board, and the New Jersey Water Supply Authority (NJWSA), and the Raritan River Basin Study (NJWSA 2000).

1.2.1 The New Jersey Municipal Land Use Law

The New Jersey Municipal Land Use Law (MLUL), enacted in 1975, is the enabling legislation that assigns state land use regulatory authority (e.g., zoning) to the municipalities (Hunterdon County and Flemington Borough). The purpose of the MLUL is to encourage land use and land development procedures that ensure public health, safety, welfare, and morals. Enhancement and preservation of the natural, cultural, historic, and visual environment are goals included in the MLUL. In addition, the MLUL enables Flemington Borough to produce and periodically update the Master Plan, Official Map, Land Use Regulations and all other development review procedures.

1.2.2 The New Jersey State Planning Act

The New Jersey State Planning Act was adopted in 1985 and requires sound land use planning to conserve natural resources, provide housing and public services and promote economic growth. The guiding natural resource protection principle of the State Planning Act is that natural resources should be conserved because the protection of environmental qualities is “vital to the quality of life and economic prosperity.”

1.2.3 New Jersey Stormwater Management Rules

On February 2, 2004 the State of New Jersey adopted the revised Stormwater Management Rules (N.J.A.C. 7:8). The revisions to the State’s Stormwater Management Rules serve as the first major update to the rules since their inception in 1983 and detail fundamental changes in the management of stormwater runoff in New Jersey. Through the revision of these rules other regulations were modified, including the Residential Site Improvement Standards (RSIS) (N.J.A.C. 5:21), the Freshwater Wetlands Protection Act (N.J.A.C. 7:7A), the

Flood Hazard Area Control Act (N.J.A.C. 7:13), the Watershed Management Rules (N.J.A.C. 7:15), and the New Jersey Dam Safety Standards (N.J.A.C. 7:20).

The new Stormwater Management Rules provide a framework and incentives for managing runoff and resolving non-point source impairment on a drainage area basis for new development, redevelopment and existing developed areas. Additionally, they establish a hierarchy for implementation of best management practice (BMP) stormwater management measures with initial reliance on low impact development (LID) site design techniques to maintain natural vegetation and drainage patterns before incorporating structural measures. These new rules also establish runoff control performance standards for groundwater recharge, water quality, and water quantity, establish special protection area measures for pristine and exceptional value waters; provide regulatory consistency among local and State regulatory agencies; and provide safety standards for stormwater management basins.

As of February 2, 2004, the design requirements identified in the Stormwater Management Rules including groundwater recharge, stormwater water quality management and the mitigation of peak flows must be met for all projects regulated under RSIS. The Stormwater Rules (N.J.A.C. 7:8-4) require that all municipalities within the State of New Jersey adopt a municipal Stormwater Management Plan. Each municipality is assigned a General Permit, which mandates that this be completed no later than 12 months from the effective date of the permit authorization. Additionally, N.J.A.C. 7:8-4 mandates that stormwater control ordinances be adopted and implemented for all municipalities in the State no later than 12 months from the date of adoption of the Stormwater Management Plan. Flemington Borough's specific General Permit requirements are provided in Section 1.6.3 of this report. Additional information on the stormwater rules can be found on the Hunterdon County Planning Board website at <http://www.co.hunterdon.nj.us/stormwater.htm>.

1.2.4 The Highlands Water Protection and Planning Act

On August 10, 2004 the State of New Jersey passed the Highlands Water Protection and Planning Act. The Highlands Region is a vital source of drinking water for more than half of New Jersey's families, yielding approximately 379 million gallons of water daily. In addition, the Highlands region contains exceptional natural resources such as contiguous forestlands, wetlands, pristine watersheds and plant and wildlife species habitats. The region also contains many sites of historic significance and provides abundant recreational opportunities. The Highlands Region also hosts approximately 110,000 acres of agricultural lands in active production.

A total of 88 municipalities are included in the Highlands Region, including 15 in Hunterdon County. Although Flemington Borough does not fall within the boundaries of the Highland Preservation or Planning Areas, its close proximity to

areas affected by the Act may bring additional development pressure and rising land prices from spillover growth.

The Highlands Act documents the geographical boundary of the Highlands Region, establishes the Highlands Preservation and Highlands Planning areas, and sets environmental standards on the Preservation area. Lands within Highlands Preservation Area boundaries are subject to strict limitations on the amount of impervious cover; limitations of development on steep slopes, in forested areas, flood zones, and within 300 feet of all water bodies. Highlands Preservation areas are also subject to the implementation of Category-1 (C-1) water quality protections on all waters. More information on the Highlands Act is available at <http://www.state.nj.us/dep/highlands/>.

1.2.5 The Hunterdon County Woodland Conservation Plan

In the summer of 2000 the Hunterdon County Planning Board and the North Jersey Resource Conservation and Development Council received a grant from the U.S. Forest Service to fund a two-year planning project, entitled “Addressing Sprawl – Innovative Community Forestry Strategies”. A product of this collaborative effort is “Building Greener Communities – Planning for Woodland Conservation” (Carter et. al., 2003). This project was undertaken in response to local interest and intends to accomplish the following goals:

- Increase municipal awareness of planning approaches to woodland conservation,
- Provide fair and practical approaches to development options that help conserve woodlands,
- Convey examples of creative site design techniques that maximize woodland conservation,
- Develop technical knowledge among professionals, including builders, contractors, public works departments, etc. through demonstrating “Best Management and Construction Practices” that protect trees during the land development process,
- Address various planning, enforcement and woodland management issues that have been
- raised by municipalities, and
- Increase municipal participation in the New Jersey Community Forestry Program.

Additional information on this initiative and a copy of the Woodland Conservation Plan is posted on <http://www.co.hunterdon.nj.us/planning>, the Hunterdon County Planning Board Web site.

1.2.6 The State Route 31 Land Use and Transportation Plan

The New Jersey Department of Transportation Route 31 Land Use and Transportation Plan was developed in an effort to stem fragmented development and prevent traffic congestion in rapidly developing areas. The New Jersey Department of Transportation (NJDOT) has initiated a series of Integrated Land

Use and Transportation Planning Studies. A local planning committee that includes representatives from NJDOT, Raritan Township, Flemington Borough, Hunterdon County, and business leaders are working together to study “Smart Growth” alternatives that will lessen impacts to residents and businesses by planning roadway networks to accommodate the expected increase in traffic volumes while encouraging friendlier pedestrian and bicycle designs, and preserving the natural and cultural resources of the area.

The NJDOT’s intent for Flemington’s Route 31 corridor is to protect the environment as both a resource and as a buffer to urbanized areas, accommodate new growth (“Smart Growth”) in existing or proposed centers, protect the character of the area, and provide infrastructure in centers where joint public/private investment would benefit the public. The framework of the plan includes creation of The South Branch Parkway to provide a regional alternative to existing Route 31 and a recreational corridor/greenway that connects adjacent schools, parks, and open space resources. The framework also includes creation of the South Branch Cultural and Open Space System to preserve lands along the South Branch River and promote passive and active open space connections throughout the area via trails and greenways linking cultural and historic resources. More information about the progress of the Route 31 Land Use and Transportation Plan is available on the Hunterdon County Planning Board web page at <http://www.co.hunterdon.nj.us/planning/transportation.htm>.

1.2.7 Farmland, Open Space and Historic Preservation Programs

The preservation of farmland, open space and cultural and architectural resources has gained the interest of both the public and private sectors for its cultural and tangible benefits. Interest has taken hold to protect these resources in order to preserve the rural landscape of areas and protect resources and history for future generations.

Flemington Borough, as will be detailed in Section II, has no active farm, and little to no remaining parcels of open space. Many of the programs utilized in other New Jersey Municipalities are not relevant to Flemington Borough. The three utilized are in the realm of historic preservation, the state Green Acres Program, and the Borough's Shade Tree Commission.

1.2.7.1 Historic Preservation

Historically, Flemington and Lambertville were Hunterdon County’s main urban centers servicing a primarily rural and agricultural community. The Delaware and South Branch Raritan Rivers served as important transportation corridors for these early settlements. Today, the county is balancing its agricultural past with its growing residential future. Roads like Routes 31 and 202 have provided access for residential development. This growth has challenged area planners to protect the area’s agricultural and cultural resources while creating valuable and sustainable

communities. Hunterdon County has a history steeped in American Indian settlements and traditional non-Indian agrarian life. Prehistoric Indians settled in Hunterdon County nearly 10,000 years ago and remained until the early 1700s. The earliest non-Indian settlers date back to the early 1700s. Although many changes have occurred in Hunterdon County's landscape over the past 300 years, there is still plenty of evidence of rural heritage. The villages and small towns that flourished in the last half of the 19th century have virtually remained the same and many of the older farmsteads in the countryside still exist.

Historic preservation protects structures, objects and properties of historic importance. Historic buildings and properties are preserved to protect historic events and architecture. Tangible benefits of historic preservation, in addition to preserving visual aesthetic character of these structures, is the resulting increase in property values and those of the neighboring properties and surrounding community. A 1997 Rutgers University study, authorized by the Governor's Task Force on History, reported that historic preservation has far reaching economic benefits to local communities and the State by producing jobs, fostering heritage tourism, spurring reinvestment, increasing tax revenue, and providing business income.

In an effort to help protect structures, objects and properties of historic importance, the National Historic Preservation Act was signed into law in 1966, which created the National Register of Historic Places. This national register offers protection of privately owned historic buildings and properties from federal government actions creating National Register criteria to evaluate buildings for inclusion on the Register and establishing a review process for public projects that involved the encroachment or razing of registered properties. New Jersey created its State Register of Historic Places in 1970.

1.2.7.2 Green Acres Program

The Green Acres Program is a division of the NJDEP, committed to preserving New Jersey's rich natural, historic, and cultural heritage. To date, more than 390,000 acres of conservation and recreational land have been or are in the process of being preserved, and hundreds of public parks have been developed with Green Acres funds. Green Acres usually partners with other state or local organizations to target and preserve critical open space areas. These other partners include, but are not limited to, the Morris Land Conservancy, the Association of New Jersey Environmental Commissions (ANJEC), the National Park Service, and the New Jersey Conservation Foundation, along with county and municipal organizations.

The monies set aside each year for open space preservation can be used to purchase land outright, or simply purchase an environmental easement (or a conservation easement) for a particular parcel of land. A conservation easement is a legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its environmental values. It allows an owner to continue to use the land and to sell it or pass it on to

heirs. When an owner donates a conservation easement to a land trust, he gives up some of the rights associated with the land, such as the rights to build additional structures, but still retains the right to grow crops. Future owners of the land will be bound by the easement's terms. The land trust is responsible for making sure the easements terms are followed.

1.2.7.3 Flemington Borough Shade Tree Commission

The Flemington Borough Shade tree Commission is empowered to exercise full and exclusive control over the regulation, planting, and care of shade and ornamental trees and shrubbery in any public park, highway, or parkway, except those located on state or county property. The Commission may regulate and control the use of the ground surrounding borough public areas, move or require the removal of any tree dangerous to public safety, encourage arboriculture, and administer treatment to, or remove, any tree situation upon private property which is believed to harbor a disease or insects which may spread to neighboring healthy trees.

1.2.7.4 Open Space, Farmland and Historic Preservation Trust Fund

The Hunterdon County Open Space, Farmland and Historic Preservation Trust Fund were established in 1999 for the preservation of lands for recreation, conservation, general open space, farmland preservation and historic preservation. In 2000, the Hunterdon County Open Space, Farmland and Historic Preservation Trust Fund Plan was adopted and offers policy guidance for the Freeholder Board on administrative and cost efficient ways to utilize County Trust Funds that will advance preservation goals. Under this Plan, two new land preservation programs are being developed; the Municipal Grants Program and Nonprofit Grants Program. These programs are intended to advance mutually beneficial land preservation objectives and increase funding sources and opportunities with State Green Acres and Farmland Preservation Programs, and municipal and nonprofit organization open space preservation initiatives.

Municipalities can apply for Open Space Trust Funds for the preparation of planning related documents or for preservation and acquisition of lands for recreation, conservation, general open space and farmland purposes. Municipalities may also apply County Trust Funds toward retiring new debt service incurred for eligible acquisition purposes, and may use Trust Funds for the restoration/rehabilitation of county-owned historic facilities. The Open Space Advisory Board has been appointed to oversee these municipal and nonprofit programs. In 2009, voters approved a measure to make funding permanent. More information about the County Open Space Trust Fund can be found at the Hunterdon County website at <http://www.co.hunterdon.nj.us/openspac.htm>.

1.3 State Planning Area Boundaries or Designated Use Areas

The New Jersey State Planning Act requires that the state prepare and periodically update the State Development and Redevelopment Plan and include, among other planning objectives, actions addressing land use and resource conservation. The current Plan, adopted March 1, 2001, contains five planning areas (metropolitan, suburban, fringe, rural, and environmentally sensitive), five planning centers (urban, town, regional, village, and hamlet), and a variety of goals and strategies addressing development intensity and resource protection. The most recent update (March, 2001) includes the category of “Environs”, or the areas just outside of Center Boundaries that contain large contiguous areas of farmland, open space and large forest tracts. Development criteria for planning centers are based on development density, available infrastructure, population, land area, and proximity to suburban centers. Of the eight statewide goals included in the State Development and Redevelopment Plan, half of them directly address conservation of natural resources, environmental protection, and preservation of cultural and open space areas.

The State Plan categorizes Flemington Borough as a Town Center adjacent to a “PA3 - Fringe Planning Area”; which is defined as a predominantly rural landscape that is not prime agricultural or environmentally sensitive land, with scattered small communities and freestanding residential, commercial and industrial development.

According to the State Planning Act, the State Plan must undergo revision and re-adoption at least once every three years. Periodic revisions of the State Plan are prepared through the statewide planning process called “Cross-Acceptance” which involves government entities at all levels and the public participation process. Cross-Acceptance is a multi-year process of soliciting public input and negotiating the policies that form the framework for the State Plan. Each County coordinates Cross-Acceptance with its respective municipal officials and residents who are asked to review and comment on a Preliminary, or Draft, State Plan. Through this multi-phased process, the State Plan may be revised consistently across municipal, county, regional and State Plans.

In April 2004, a Preliminary Plan was released, proposing amendments to the 2001 State Plan. This Preliminary Plan is currently in the Cross-Acceptance phase and will likely lead to the revision and re-adoption of the next version of the State Plan later in 2005.

1.4 The Flemington Borough Master Plan

The current master plan of the Borough of Flemington was adopted July 1997. As per NJ Municipal Land Use Law, a re-examination of the master plan was conducted in 2007 and a report issued and adopted by the planning board in December 2007. As of this writing, the Borough is undergoing a visioning process and plan endorsement with the NJ DCA Office of Smart Growth. Both the visioning

process and the December 2007 reexamination report are expected to lead to minor revisions of the master plan in 2010.

Components of the Flemington Borough Master Plan include:

1. Community Facilities Plan Element
2. Open Space and Recreation
3. Land Use Plan Element
4. Housing Plan Element
5. Circulation and Parking Plan Element
6. Historic Preservation Plan Element
7. Recycling Plan Element

The Borough of Flemington, subject to third round COAH rules, has submitted and received substantive certification in April 2009 from the Council on Affordable Housing, subject to development of a rehabilitation program.

1.5 Flemington Borough Zoning and Development Ordinances

Zoning is a set of standards controlling the location, type, and intensity of development on a specific site. The Zoning Districts for Flemington Borough regulate land use, limit and restrict the use of buildings and structures, regulate lot coverage, lot size and lot dimensions, and require performance standards.

The location and boundaries of zones and lot lines are depicted on the Land Use Plan of the 1997 Flemington Borough Master Plan. The most current zoning map is kept on file in the planning board office and bears the signature of the Borough clerk and date of adoption on the cover sheet. The 10 zoning districts provide for uses of:

- Residential Uses:
 - Single family residential
 - Transition residential
 - Townhouse
 - Garden Apartments
- Business and Commercial Uses
 - Transition Commercial
 - Community Business
 - Downtown Business
 - Professional Office
 - Village Shopping
 - Highway retail
 - Overlay/Super Shopping
- Public

1.6 Flemington Borough Resource Protection Ordinances

There are a variety of state regulations and programs intended to protect natural resources. Some examples include the Freshwater Wetlands Protection Act, The Threatened and Endangered Species Act, The Flood Hazard Area Control Act, Stormwater Management Rules, Soil Erosion Regulations, and recently adopted measures pertaining to shade trees.

The Flemington Borough Environmental Commission was created to help local officials implement environmental regulations locally and county-wide to prioritize open space parcels and to plan for open space acquisition and maintenance. The following sections provide an overview of some of Flemington Borough's resource protection ordinances.

1.6.1 Soil Erosion and Sediment Control

Application and review procedures are required for any project where the soil disturbance exceeds 5000 square feet of surface area. Applicants must submit the plans to the Hunterdon County Soil Conservation District for review. This application does not apply to agriculture, horticulture, or residential landscaping uses.

1.6.2 Stormwater Management

In April 2005, Flemington Borough Adopted a Municipal Stormwater Management Plan (MSWMP), prepared by Robert J. Clerico, PE, Borough Engineer, of Van Cleef Engineering Associates. Following requirements of the State of New Jersey's Department of Environmental Protection (NJDEP) Rules and Regulations, N.J.A.C. 7:8, the MSWMP addresses groundwater recharge, stormwater quantity, and related impacts, by incorporating stormwater design and performance standards for all new "major" developments within the Borough (defined as projects that disturb more than one acre of land or create more than 0.25 acre of impervious coverage). These Standards are intended to minimize the adverse impacts of stormwater runoff, affects of water quality/water quantity, and handling the loss of groundwater recharge, which provides for the "Base Flow" in receiving waterbodies. The MSWMP also describes long-term operation and maintenance measures for existing and future stormwater management facilities.

Since the Borough has a combined total of less than one (1) square mile of vacant or agricultural lands, the Borough was exempt from preparing both a Low Impact Analysis, and a Build Out Analysis. They also chose not to include a separate mitigation plan at that time. As such, the Borough requires all new development subject to stormwater management regulations to provide all stormwater "Best Management Practices" (BMPs) on-site. The ordinance adopted by the Borough upon adoption of this MSWMP follows the "Model Stormwater Control Ordinance for Municipalities" from the New Jersey Stormwater BMP Manual, April 2004 Edition.

Section II: Environmental Resource Inventory

2.1 Introduction

This Environmental Resource Inventory describes the importance of Flemington Borough's resources and illustrates the location and spatial distribution of these resources within the Borough. This section contains individual sections regarding specific environmentally important features. A supporting map accompanies each subsection. This section is formatted so that the text and figure for each subsection can be viewed at the same time. All tables used to further define or clarify each resource are presented at the end of this section.

2.2 The Ecological and Human Health Reasons for Identifying and Protecting Natural Resources

In the late 1970s, municipal master plans began including natural resource plans; however, natural resources were commonly defined within the contexts of consumptive use, human health and safety, and economic gain. Although resource maps included the location of natural features, the associated narrative described how the resource presented constraints to low-cost development, constituted safety hazards, or presented economic return. In addition, the narrative in traditional resource plans often discussed associated hazards and potential safety concerns if a site with "environmental constraints" was developed. Although early recommendations for resource protection indirectly protected natural resources of a municipality, the biological and ecological significance of those natural resources was not considered.

Over time, the definition of "natural resource protection" has evolved to include the ecological significance of natural resources as well as how communities may be designed in order to protect valuable resources. Developments have a variety of direct and indirect impacts upon environmental resources and the ecological stability of an area. When land is developed the existing wildlife is displaced to remaining open areas. There is also a well-documented correlation between increased development and increased non-point source pollution. Surface runoff, erosion and sedimentation are natural occurrences; however they are accelerated when land is developed. For instance, when vegetated soils are replaced with impervious surfaces such as roads, homes, driveways and parking lots, stormwater runoff, erosion and sedimentation increase. While our soils, wetlands, woodlands, lakes and streams have natural pollutant filtering capabilities, their ability to cleanse pollutants is diminished as the density of development and the amount of pollution increases.

There are human health and economic benefits of natural resource protection and the preservation of open space. The consequences of growth also affect lifestyles and personal health. Planning decisions affect lifestyle behavior, and the availability of more livable, communities. Land use practices and policies should

support the design of active, (walkable/bikable) community environments (ACEs). ACEs are places that are close to home or work, are safely and easily accessible, and that allow people to be physically active. An example would be a mixed-use neighborhood with sidewalks, trails, parks, and other facilities that encourage physical activity. The importance of these types of communities is that as they become more prevalent, they provide an opportunity for people to reintroduce physical activity into their daily lives. In addition, transportation alternatives and policies should be created to shift automobile trips to walking and bicycling, particularly trips to locations that are close to home such as schools, parks, and stores. Integrating walking and bicycling is appropriate because 25% of all trips are less than one mile, but 75% of those trips are made by car. With Americans using cars for 89% of their trips, it is not surprising that the number of trips the average American adult takes on foot each year dropped 42% between 1975 and 1995. For children, trips to school by walking and bicycling dropped 40% in the past 20 years. Today, only 10 percent of children walk or bicycle to school compared with a majority of children a generation ago, and these children now must be driven to places that traditionally could be reached by foot or bicycle. The safety of ACEs is also an important consideration, and increasing pedestrian safety and reducing the chance of accidents involving pedestrians is instrumental component in successful planning (Urban Land, 2001)

Degradation of natural resources also impacts the overall quality of life (QoL) of Borough residents. Loss of natural resources often goes hand-in-hand with increased impervious cover, noise, and light pollution. All of these issues affect QoL of the residents who work and play in Flemington Borough. This NRI is one tool to help Flemington Borough officials and landowners consider the potential environmental impacts associated with a land development proposal. This inventory should be used in concert with other tools such as the Borough Master Plan, Zoning and Land Development Regulations, and Best Management Design Practices to assist in environmentally sound decision making.

2.3 Base Map - Roads and Tax Parcels

Flemington Borough is located in south-central Hunterdon County as is surrounded on all sides by the Township of Raritan. Flemington Borough has the distinction of being the county seat and a traditional center of population. The Borough is small in area, covering 1.07 square miles and had an estimated population in 2000 of 4200 persons. Flemington is about 32 miles due west of the closest portion of New York City and 35 miles north of Philadelphia. The Borough is traversed by three major transportation routes, State Route 31, State Route 12 and U.S. Route 202 and has access to major rail routes. The location of Flemington Borough and its associated boundaries, roads and tax parcels is presented in Map 1.

2.4 Bedrock Geology

The geology of Flemington Borough was almost entirely formed during the Triassic Period of the Mesozoic Era and may range in age from 180 million to 225 million years old. During the Mesozoic Era, an extended period of earth faulting formed large shallow basins into which sediments were deposited during periods of drought and abundant rainfall forming sedimentary sandstones and conglomerates. Silts interbedded the earlier sandstones, formed the shales, siltstones, and the other sedimentary formations of this period (SBWA, 1975). In addition, a small intrusion of Orange Mountain Basalt is present from the Jurassic Period in the northwest portion of the Borough and nearby Mine Brook Park in Raritan Township. The boundaries of geologic formations located within the Borough is presented in Map 2.

The geologic features of an area interact with its physical (e.g., temperature, relief, drainage) biological (e.g., plant and animal interactions), chemical (e.g., pH, chemical cycling), and human (e.g., development, pollution) elements. The type of bedrock and the presence and pattern of faults, fissures and fractures will also influence the susceptibility for ground subsistence. With respect to vegetation and wildlife and associated habitats, the relief, drainage, soil and underlying rock formations will affect the diversity of plants and animals as well as the types and diversity of habitats present in a region. In addition, the surficial and underlying geology directly affects the availability of potable water, which in turn can greatly influence patterns of development and an area's development potential. Specifically, the predominant geologic features underlying an area, including the extent of faulting, fissures or the dominant form of rock, directly affects the rate of groundwater recharge and the ability to produce and sustain potable water. These same geologic attributes can also increase the vulnerability of groundwater to pollution owing to the presence and pattern of faults, fissures and fractures all of which act as conduits for surface contaminant transport. Additional information on groundwater and surface water resources, and pollution vulnerability are presented in detail in subsequent sections of this NRI.

The overall geology in the areas in and surrounding Flemington Borough is assigned a Zone 1 Radon Rating from the EPA (see EPA Map of Radon Zones at <http://www.epa.gov/radon>). The Zone 1 rating indicates the highest potential (greater than 4 pCi/L) for radon. Although the actual effects of radon are not well known, radon is believed to cause cancer as well as other debilitating diseases. On-site testing is the only sure way to determine if radon is a health hazard in a particular area. A radon specialist should be contacted for site specific concerns.

2.5 Bedrock Aquifers

An aquifer is a geologic formation capable of supplying water through wells. Groundwater is stored in fissures, cracks and small interconnections and voids between individual grains in the rocks. The permeability of the bedrock and its ability to serve as an aquifer of significance will largely depend on the extent and

degree of interconnection between individual grains of rock or the porosity of the rock. More permeable formations facilitate the travel of groundwater. Conversely “tighter” formations, lacking extensive or well defined interconnection between the rock, such as argillite, shale and diabase, are considered non-porous. As such, geologic formations play an important role in the location and the yield of groundwater aquifers. Aquifer characteristics of the various geologic formations occurring within the boundaries of the Borough are described as follows:

- **Basalt** ~ Storage and movement of groundwater in the Basalt is exclusively through fractures. The most successful domestic wells are developed from 50 feet to 100 feet beneath the ground surface.
- **Brunswick Shale** ~ In general, the Brunswick Shale is a reliable source of water for most domestic and industrial uses. Groundwater flows through the Brunswick shale both in nearly vertical features and joints, and also along nearby horizontal fractures along bedding planes. Wells tapping the Brunswick Shale typically have high initial yields which tend to decline as the fractures around the well are dewatered. Therefore, the ultimate yields of wells developed within Brunswick shales are usually considerably lower than the initial yields.
- Potable water for Flemington Borough is currently (2010) provided by a small number of wells operated by the Flemington Borough Water Department. The location of Borough wells relative to the listed aquifers is presented in Map 3. Surrounding each well is a so called Well Head Protection Area (WHPA), which delineates the horizontal extent of ground water captured by a well pumping at a specific rate over a two-, five-, and twelve-year period of time. WHPA delineations were conducted in response to the Safe Drinking Water Act Amendments of 1986 and 1996 as part of the Source Water Protection Program (SWAP). These delineations are the first step in defining the sources of water to a public supply well. Within these areas, potential contamination can be assessed and appropriate monitoring can be undertaken as subsequent phases of the NJDEP SWAP. The location of Borough wells relative to the delineated WHPA's is presented in Map 4.

2.6 Soils

The soils of Hunterdon County were formed under forest cover (primarily hardwoods) from either residual material weathered from underlying rocks or transported material deposited by water, glacial ice, wind, or gravity. These soil formation processes, coupled with various soil qualities, such as texture, water-holding capacity, and nutrient content, are active factors in determining the resident biological community. Soils provide plants with a foothold for their roots and provide the necessary nutrients for plants to grow. Soils also play a key role in the management of stormwater runoff and the recharge of groundwater. The various soil horizons absorb and filter precipitation, in the process greatly influencing the percolation and retention of rainwater, the generation of runoff, the recharge of the surficial aquifer, the maintenance of baseflow for streams and wetlands, and the retention of pollutants. The characteristics of an area's predominant soils can greatly influence land use activities and development patterns. As prevailing soil types can change significantly from site to site, soil conditions must be properly inventoried and evaluated as part of any land disturbance or land development activity.

This need to identify and inventory a site's soils applies to commercial, residential, agricultural and recreational land use projects. For example, septic tank absorption fields will not function properly in clayey and wet soils, while certain soils are too unstable to support roads or building foundations and wet, poorly drained soils will dictate whether a structure should, or should not, be built with a basement. Soil grading, excavation, compaction or other forms of disturbance always have the potential to alter the percolation and permeability attributes of a soil, processes that affect hydrologic dynamics and have the potential to adversely affect surrounding environmental resources. Therefore, the implementation of judicious conservation, erosion control, and soil disturbance and compaction measures can significantly minimize or mitigate both direct and indirect impacts to associated groundwater, surface water, biological and other environmental resources.

The United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Soil Survey of Hunterdon County, New Jersey (USDA, 1974) identifies forty-four (44) soil series in Hunterdon County. The majority of Flemington Borough consists of Penn channery silt loam. Other types that occur are Quakertown silt loam, Klinesville channery loam, Reaville silt loam and Raritan silt loam. Users of this NRI should consult either the USDA Hunterdon County Soil Survey (USDA, 1974) or the NRCS Soil Survey for detailed descriptions of the origin, composition, structure and limitations of each of the soil types. The location of soil series within Flemington Borough is presented in Map 5.

2.7 Steep Slopes

The topography of the land is important in environmental planning. As noted previously, topography influences the formation of soils and affects the erodibility of soils. It can also influence, and play a significant role, in determining the establishment of vegetation, the development of habitat types and the types of flora and fauna supported in a given locale or region. As such, identifying and characterizing an area's topography is important in terms of understanding natural resource management and site development implications. In particular, the identification and assessment of steeply sloping areas is critical. Such areas, because of their natural limitations and their susceptibility to impact and alteration, require special precautions and protections from disturbance, clearing and development. The traditional development process replaces vegetated, permeable land areas with less permeable surfaces such as lawns and impermeable surfaces such as roadways, parking lots, driveways, and homes. The volume, or amount, of surface water and the rate of runoff, substantially increases as land development occurs due to the compaction and alteration of the soils, the modification or loss of vegetative cover and the increase in impervious cover. A decrease in the ability to percolate or infiltrate precipitation increases the potential rate of pollutant generation, mobilization, and off-site transport. This includes pollutants such as eroded soil, petroleum products, heavy metals (e.g.,

zinc, lead and copper), pesticides, fertilizers and other contaminants, all of which can impact Flemington Borough's wetland and groundwater resources.

Steep slopes present a significant hazard potential for development, and careful planning is essential to avoid adverse impacts to the surrounding environment. Disturbance of existing vegetation on a steep slope will lead to excessive erosion, which in turn will degrade water quality through high turbidity, sediment deposition and additional pollutant loads. Excessive erosion may also lead to slope failure, posing a hazard to surrounding buildings and/or transportation corridors.

The most steeply sloping areas are usually the last to be developed, due to the inherent development constraints and construction costs. Therefore, they are often the only remaining vestiges of open space, scenic vistas, and wildlife habitats. For these and other reasons, steep slopes are valued for their scenic and environmental qualities, and when left untouched, provide habitat for flora and fauna. Often unrecognized is that some of the steeper sloped areas may also serve as the headwater area of streams. Disturbance of these steeper sloped areas can therefore have an effect on the baseflow or hydrologic properties of down gradient streams, wetlands and riparian areas.

Flemington Borough was settled historically on the best available topography. As such, there are very few steep slopes within Borough limits. Map 6 documents the handful of parcels containing steep slopes of over fifteen (15) percent; nowhere in Flemington Borough are there slopes of over twenty-five (25) percent.

Of the parcels containing steep slopes, the overwhelming majority are within parks, cemeteries or other public spaces. As a result, potential new development on lots with steep slopes is highly unlikely within Flemington Borough.

2.8 Surface Water

Surface waters, which include streams, ponds, lakes and rivers, comprise some of the most significant natural resources of Flemington Borough. These resources often have archaeological significance and are also often associated with historic development patterns and early commercial and agricultural enterprises. But more often these resources are treasured for their ecological, environmental, recreational and aesthetic attributes. The New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B) for surface waters are designed to set water quality effluent-based limitations intended to improve impacted or degraded surface waters, and to protect and maintain the quality of unimpaired surface water resources.

Primary regulatory goals include maintaining and protecting exceptional waterways, and improving degraded waterways through pollution discharge limitations (e.g., anti-degradation). Included in these regulations is a classification scheme based in part on the ability of surface water to support trout and other

species of fish. Streams classified as Trout Production (TP) are those used by trout for spawning and/or nursery purposes, those classified as Trout Maintenance (TM) are those waters with the potential for supporting trout year round, and Non-Trout (NT) waters are those not suitable for trout, but are capable of supporting a wide variety of other species of fish.

Flemington Borough's surface water features are illustrated, their delineated watershed boundaries, and freshwater Wetlands in Map 7, Streams. At the Southwest border of the Borough, lie Walnut Brook and a tributary which are both part of the First Neshanic River sub-watershed. Significant stream restoration projects are currently underway along the Walnut Brook. Bushkill Brook runs along the northern boundary of the Borough, and is part of the South Branch Raritan River Watershed. All streams in the Borough are designated as FW2-NT.

Assessing the quality of surface water resources involves understanding the various environmental data used to determine water quality. Some of these data are physical (e.g., stream depth, stream flow), chemical (e.g., dissolved oxygen, temperature, pH), and biological (e.g., macro invertebrates, fish, bacteria). The quality of New Jersey's surface water is monitored through several different programs. The Bureau of Freshwater & Biological Monitoring, by means of the Ambient Biomonitoring Network (AMNET), collects macro invertebrate, visual observations, stream habitat assessments and limited physical and chemical data to establish the "health" of streams and lakes. The data are incorporated into the National Environmental Performance Partnership System (NEPPS) and used as a primary indicator of water quality impairment.

There are no AMNET sampling stations within Flemington Borough, so an exact determination of the health of Borough waterways is difficult to measure. The 2004 Raritan Regional AMNET Study shows that other nearby monitoring stations within Watershed Management Area 8 have a Bioimpairment Rating of "none" or "moderate". No stations within this watershed management area are rated as "severe", suggesting that water quality in the Flemington area is generally good. Additional information and copies of AMNET reports can be accessed via <http://www.nj.gov/dep/wmm/bfbm/amnet.html>.

While surface water flow data is monitored by the U.S. Geological Survey (USGS) in collaboration with the NJDEP at monitoring sites throughout the state, none are within Flemington Borough. Monitoring of flow data is essential in determining impacts to water quality and the effects of development on water flow and flood stage elevation. Such data is impossible to determine for Flemington Borough at this time.

2.11 Flood Zones

Flood plains occur in the relatively flat areas adjoining the channel of a natural stream or river. These areas become inundated following significant storm events and during periods of high water. There are two different flood zones regulated by

the NJDEP, the floodplain and the floodway. The flood plain is defined as “the area inundated by the regulatory flood including the watercourse that creates it”. In general, the regulated flood plain is the area that would be covered by water during the 100-year storm. As defined by NJDEP, the floodway is the channel and portions of the flood plain adjoining the channel which carry and discharge the flood flow generated by the 100-year design storm. The floodway always includes the streambed or lakebed where the water normally flows, and usually extends to the top of the bank (if there is a defined bank) and sometimes beyond. The flood fringe is the outer area where floodwaters move more slowly. Floodplains play an important, critical hydrologic and hydraulic role for all river and stream systems. During periods of heavy rain and high waters, floodplains temporarily capture and store excess floodwater, slowly releasing it back to the stream as the storm subsides and floodwaters recede. Floodplains also function to reduce the flow and velocity of floodwaters, and assist the capacity of the river channel in moving stormwater runoff downstream. In addition, floodplains act as natural water filters. As stormwater runoff inundates the floodplain, the riparian vegetation present in the floodplain filters and traps sediments and particulate pollutants. As the retained floodwater percolate into the soils of the floodplain, additional pollutants and nutrients are adsorbed and biologically assimilated by the various plants and trees. This aids in reducing water quality impacts. The riparian vegetation present along the stream banks anchors the soil, reducing erosion and preventing stream channel instability and failure. This vegetation also provides shade that mitigates water temperature fluctuations and helps maintain cooler summer-time water temperatures critical to the survival of many fish and aquatic species.

Floodplain areas also provide ecological, aesthetic, economic and recreational benefits. They serve as transitional regions comprised of both aquatic and terrestrial habitats. Within the floodplain, because of its unique hydrology, are often a host of dependent plant and animal species. Preserved floodplain areas also offer travel corridors for upland wildlife and birds, often creating linkages between fragmented upland habitat areas. They also provide recreational opportunities for hikers, bird watchers and naturalists. In addition, because of their natural ability to attenuate and store flood waters, floodplains buffer homes and businesses from the hazards and damage related to flooding.

Although not obvious as shown on Map 8, floodplains have an impact on the Borough. In the southwest corner of Borough, there is an extensive floodplain, which includes a floodway (Main flood channel) and a 100-year floodplain. The amount of till allowed is regulated by the NJ Department of Environmental Protection through its stream encroachment permitting process. Construction limitations are also imposed by the Federal Emergency Management Agency (FEMA) and the state Uniform Construction Code. Of lesser significance are the 500-year floodplains which are just found in the extreme northern end of the Borough.

2.12 Land Use/Land Cover

Although frequently, but incorrectly used interchangeably, land use (LU) and land cover (LC) are interrelated but separate terms. Land Use defines the present manner in which land is being utilized in a given location. It essentially reflects a type of land development including commercial, industrial, residential and agricultural uses. Often times, land use is defined by local zoning, reflecting the type of development either occurring or allowed within a given sector of a municipality. Conversely, Land Cover (LC) generally pertains to the type of vegetation that dominates a particular area. The location of the various LU/LC in Flemington Borough (2002 data) is presented in Map 9.

2.13 Existing Open Space and Preserved Lands

For the purposes of this NRI, Open Space is defined as any parcel of land area or water, essentially unimproved and set aside, dedicated, designated or reserved for public use, private use or enjoyment, or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space; provided that such areas may be improved with only those buildings, structures, streets, off-street parking and other improvements that are designed to be incidental to the natural openness of the land. Preserved open space protects the local water supply and quality, preserves sensitive habitats for endangered and threatened species and minimizes urban sprawl.

Obtaining open space parcels occurs mainly through either donation or purchase. Land may be donated to the State of New Jersey or a particular County or Municipality, or may be purchased. In either case, deed restrictions are placed on the parcel of land so that future development and adverse impacts cannot occur on that land. In the State of New Jersey, the Preservation of Open Space has become an issue in recent years as development activities increase. There are numerous programs in place to assist those interested in preserving open space. Each year, the State dedicates millions of dollars of funding for the purchase of Open Space. Some of these programs include the Green Acres Program, discussed in Section I of this NRI.

Flemington Borough, as a long established town center, does not contain any large tracts of undeveloped land. As such, traditional open space programs are currently not utilized. Open Space funds are mainly dedicated to historic preservation efforts at the Samuel Fleming House. In the future, we hope to expand the use of these funds to other projects within the Borough.

This is not to say that there are no open spaces within Flemington Borough. Within the Borough, there are five (5) areas used for park and recreational activities. The location of existing open spaces is presented in Map 10.

2.13.1 Tuccamirgan Park

The Tuccamirgan Park is located along Bonnell Street in the western portion of the Borough. The park consists of 5.35 acres and is used for passive recreation. The park is located near, and is used by, students of Reading-Fleming Intermediate School

2.13.2 Green Acres Park

The Green Acres Park is also located along Bonnell Street and is adjacent to Tuccamirgan Park and the Reading-Fleming Intermediate School. The park consists of 5.20 acres and is used for passive recreation. The park is also used by students of the Reading-Fleming Intermediate School.

2.13.3 Reading-Fleming Intermediate School Grounds

The Reading-Fleming Intermediate School property consists of 15 acres of which approximately 9 acres to the north of the school building are occupied by a softball field and 2 soccer / lacrosse fields.

2.13.4 Memorial Park

The Borough's Memorial Park is a landlocked parcel in the eastern portion of the Borough adjacent to the Black River and Western Railroad right-of-way. The park consists of about 7 acres and contains three (3) softball / baseball fields.

2.13.5 County/Flemington Park

Flemington Borough Park is located in the heart of Flemington and is the site of local community events. In the center of the park is an old-fashioned, Victorian-era gazebo.

2.14 *Shade Trees and Residential Resource Assets*

As noted in Section I, Flemington Borough has an active Shade Tree Commission. The Shade tree Commission is currently developing a tree inventory for the Borough which shall be included as an addendum to this document when completed. Additionally, the Shade Tree Commission has proposed, and Borough Council has adopted, an ordinance to protect existing historic and specimen trees in the Borough. The Commission sponsors an Adopt-a-Tree program for private homeowners, and plants trees on public spaces including, but not limited to sidewalks in the downtown business district and in local public parks.

2.15 *Known Contaminated Sites*

Flemington Borough, like many older town centers in the State, has a number of documented sites of environmental contamination. This is due to the Borough's role as a site of small-scale manufacturing for the region, and those activities typically associated with a rural town. Map 11 illustrates the Known

Contaminated Sites within Flemington Borough. These fifteen (15) sites are all sites with contamination from on-site sources, and are listed below.

Known Contaminated Sites List - 2009

Rec	Site Id	KCSL Name	Address
1	80549	3 BROAD ST	3 Broad ST
2	69287	Penn Color Incorporated	80 Park AVE
3	13830	Eric's Main Street Mobil	144 Main ST
4	13831	Hess Station 30237	RTE 31
5	52847	Flemington Maintenance Yard	Main ST
6	178753	Flemington Water Company Well #6	Elwood & William ST
7	68752	Flemington Water Department Well 7	65 RTE 12
8	6761	Forties and Fifties Forever LLC	RTE 12 & S. MAIN ST
9	21287	Elizabethtown Gas Co.	Main ST
10	42787	Mobil Oil Corp 15LN3	RTES 31 & 202
11	44658	Don's Imports	RT 12 & Brown ST
12	47205	Van Fleet Amoco	RTE 31 & E. Main ST
13	178789	54 MAIN STREET EAST	54 E. Main ST
14	12898	Blue Star Gas Station	282 RT 202 & 31 N
15	6755	Tirpok Cleaners	6 Reaville AVE

The Known Contaminated Sites List (KCSNJ) for New Jersey (Non-Homeowner) 2009 are those non-homeowner sites and properties within the state where contamination of soil or ground water has been confirmed at levels equal to or greater than applicable standards. This list of Known Contaminated Sites may include sites where remediation is either currently under way, required but not yet initiated or has been completed. The location of Known Contaminated Sites within the Borough is presented in Map 11.

Additionally shown on Map 11 is the location of established Deed Notice Areas and Groundwater Contamination Areas. These features are defined as follows:

2.15.1 Groundwater Contamination Areas (CEA):

Known Contaminated Sites or sites on the NJDEP Site Remediation Program (SRP) Comprehensive Site List where groundwater contamination has been identified and, where appropriate, the NJDEP has established a Classification Exception Area (CEA). CEAs are institutional controls in geographically defined areas within which the New Jersey Ground Water Quality Standards (NJGWQS) for specific contaminants have been exceeded. When a CEA is designated for an area, the constituent standards and designated aquifer uses are suspended for the term of

the CEA. For further information about Classification Exception Areas:
<http://www.state.nj.us/dep/srp/regs/guidance.htm#cea>

The location of CEA's (2009) within Flemington Borough are as follows:

Rec	CEA #	Site Name	Address
1	E95241	Penn Color Inc.	80 Park Ave.
2	403	Hess Service Station #30237	Rt. 31
3	90-02-08-1357	Leon's BP (Haynes Oil)	Rt. 12 & S. Main St.

2.15.2 Deed Notice Areas:

Known Contaminates Sites or sites on the NJDEP SRP Comprehensive Site List (CSL) that have been assigned a Deed notice. Deed Notices are institutional controls in geographically defined areas within which soil remedial cleanup guidelines for specific contaminants have been exceeded. A deed notice is described by NJ State Legislature (NJSA 58:10B-13a) as a "...notice to inform prospective holders of an interest in the property that contamination exists on the property at a level that may statutorily restrict certain uses of, or access to, all or part of that property, a delineation of those restrictions, a description of all specific engineering or institutional controls at the property that exist and that shall be maintained in order to prevent exposure to contaminants remaining on the property, and the written consent to the notice by the owner of the property". The deed notice (polygon) was developed to provide information regarding the spatial extent of soil contamination, as well as information regarding engineering controls (eg. cap or fence) and contamination found in the soils above the appropriate standard. This is aimed to help preserve adequate protection of these contaminated soil regions and helps to minimize any chance of exposure.

The location of Deed Notice Areas (2004) within Flemington Borough are as follows:

Rec	KCSL #	Site Name	Address	Engineering Control
1	NJL800202723	Great Freight Station	35 - 45 Stangl Rd.	Paved area, veg cover & building floor

Note that new contaminated sites have been identified since the creation of this list and are not included here. For further information contact NJDEP's Site Remediation Program and Waste Management (SRWM) lead program, which are identified with each site listed in this data base. Contact information for SRWMs lead program can be acquired at www.state.nj.us/dep/srp

2.16 Municipal Water Supply Issues

Flemington Borough relies upon a series of municipal wells to provide drinking water for residents and businesses. When local wells are off-line, or are

inadequate to meet demand, additional water supply is purchased from an outside provider. Of concern to residents is both adequate supply and safe water quality. As a result of years of development, in addition to naturally occurring elements, groundwater contamination is a significant concern in Flemington Borough.

As shown in MAP, a substantial amount of the Borough is within established wellhead protection areas. Any new development within these parcels, or redevelopment with significant ground disturbance should be evaluated for impacts upon the water supply.

In recent years, high levels of arsenic (>5 ppb) have been documented in a number of municipal wells. Remediation projects are ongoing, and should be adequate to address this contamination issue. Further monitoring of well contamination remains a high priority for the Environmental Commission.

In light of both supply and contamination issues, Flemington Borough contracted with a geologist to identify potential locations for new municipal wells. The Hydro-geologic Evaluation, dated January 27, 2006, stated:

The optimal location for a new well would be in the vicinity of Well #4. Unfortunately, except for Block 50, Lot 6.01, the Well #4 location, there are no Borough-owned properties in this area. Block 50, Lot 6.01 is too small for location of a second production well. Block 49, Lots 1, 9, 10, & 11, "Flemington Shopping Plaza" may be a possible site, if the Borough could obtain an easement for same. The Flemington Cut Glass property may also be a possible site for well development, again if the Borough could obtain an easement or purchase the needed land. Of the available sites already owned by the Borough, it is my opinion that the southwest corner of Block 39, Lot 10, the ball fields, would be the best location for a new water supply well.

In addition to already established wellhead protection areas, any new development or significant redevelopment projects impacting these potential well locations should also receive scrutiny.