



**Environmental Resources Inventory
Township of Maplewood
Essex County, New Jersey**

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1.0 Executive Summary

The Township of Maplewood has never prepared an inventory of natural resources, although such resources were sometimes mentioned in Master Planning documents. A detailed natural resources inventory serves to inform the planning process by providing a factual basis for land use decision-making.

Maplewood is centrally located along the southern boundary of Essex County, New Jersey. It is surrounded by the municipalities of Irvington, Union, Springfield, Millburn, Orange, South Orange and Newark. The area of the Township is 3.85 square miles. Maplewood Township is largely developed. Most development in the Township is residential, but commercial and industrial development is also present. The South Mountain Reservation occupies the northwesterly portion of the municipality and a number of smaller parks and recreational areas structure the remaining public open space. A small number of privately-owned lots are currently vacant (see Figure 1). (PPSA 2004).

Maplewood Township is situated within the Piedmont Physiographic Province of New Jersey. Geologically, the Township encompasses volcanic basalts in the higher elevations of the First Watchung Mountain and glacial deposits in lower-lying areas. Surface waters include the East and West Branches of the Rahway River and Lightning Brook, a tributary to the Elizabeth River. Crooked Brook and Tuscan Brook are two small waterways tributary to the East Branch of the Rahway River. Floodprone areas occur along each of these waterways. While the entire Township lies within the Drainage Basin of the Arthur Kill, land drains to several different sub-watersheds. Unfortunately, the surface waters of Maplewood Township suffer from impaired water quality, which affects the health of aquatic biological communities and recreation uses.

In spite of the Township's location in a highly urbanized portion of New Jersey, a number of vegetative communities are present, providing for varied wildlife habitats. The healthiest plant and animal communities are present in the South Mountain Reservation, due to its protected status and connection with natural communities in adjacent municipalities. While natural communities have not been characterized through



field surveys, plant communities have been generally categorized through aerial photography and Geographic Information Systems (GIS) mapping. Detailed information available from regional sources provides a good idea of the kind of plants and animals that can be expected to inhabit Maplewood.

Not only is the natural heritage of Maplewood Township significant, but the Township has retained a great deal of its historical heritage. Numerous structures are still standing that were constructed prior to 1862. The Township is in the process of preparing an inventory of these resources and undertaking actions to protect this heritage. The sum of these resources and the awareness thereof helps to establish a sense of place for Maplewood citizens. This inventory can provide the framework for planning the future of the Township. Valuable environmental resources can be preserved, and development and even the restoration of degraded resources can be undertaken.

The mapping and description of sensitive areas facilitates the proper use and protection of existing natural areas, the appropriate development of the few remaining vacant, privately-owned land parcels and the redevelopment of developed lands. This inventory can serve in the refinement of zoning regulations and land use ordinances. The identification and understanding of natural systems and their inherent and regulatory limitations for development serve to prevent future environmental problems and associated mitigation costs. The inventory can identify possibilities for regional partnerships and planning activities that can improve environmental conditions and quality of life in the Township of Maplewood.



2.0 Physical Resources and Conditions

The environmental setting of a region is the sum of the physical and biological features and processes that characterize the region. The physical conditions, including the location, topography, geology, soils, water resources, etc. directly influence the overlying biotic communities that occur in an area. These physical conditions affect the types of development or other human activities that are right for a particular site. Knowledge of these resources is important in long-term planning for appropriate land use.

2.1 Climate

The undulating flow of air masses, generally moving from east to west across the continent of North America dominates the climate of New Jersey. This pattern of air mass movement is called the westerlies. Since these streams of air vary in intensity and can be wet or dry, cold or warm, New Jersey weather is highly variable on a day to day basis. Despite its small size, differences in geology, proximity to the Atlantic Ocean and the pattern of north-south variation in the track of air masses across the State, allow five distinct climate regions to be delineated. These five regions are Northern, Central, Pine Barrens, Southwest and Coastal (ONJSC Accessed 2006).

Maplewood Township is located in the Central Climate Zone of New Jersey. Trending in a northeasterly to southwesterly direction, this zone extends from New York Harbor and the Lower Hudson River to the northeast and the bend of the Delaware River near Trenton. The intense urbanization present in this zone is associated with large amounts of automobile traffic and industrial operations, which release pollutants into the atmosphere. Urban centers, with their predominance of buildings and pavement, produce a "heat island" effect, since the materials predominantly used in building and paving tend to absorb and retain more heat than vegetated areas. This leads to warmer nighttime temperatures (ONJSC Accessed 2006).

The National Oceanic and Atmospheric Agency (NOAA) operates two climate monitoring stations in Essex county for which data is available on the web sites of the Office of the New Jersey State Climatologist and the Natural Resources Conservation Service. These stations are located in Canoe Brook and at Newark



International Airport. The New Jersey State Climatologist considers the Newark International Airport Station (Station ID: 286026), to be a very stable and reliable source of climate data over time. The station has operated since January 1, 1930 (Robinson 2005). This station is closest to Maplewood Township and is expected to be representative of conditions in the municipality. Information from this station will be presented below.

Two ridges, passing through the Township of Maplewood are situated five and eight miles, respectively, to the northwest of the Newark International Airport monitoring station. These ridges cause local variation in climate trends. The most easterly ridge rises about 200 feet in elevation and the more westerly ridge rises to about 540 feet. Winds originating from the west or northwest flow downslope across the local area to the east-southeast. The moving air is dried and warmed as it flows downslope, due to an effect called adiabatic warming. Because of this effect, fewer thunderstorms are experienced than typical of areas to the west of these ridges. Easterly winds from the direction of the Atlantic Ocean tend to moderate the temperature. Temperature can fluctuate 5 to 15 degrees very rapidly when winds shift to the east or west, due to the described physiographic conditions (NOAA, NCDC Accessed 2006).

As recorded in Newark, the average summer temperature is 75.5 degrees F. The average daily maximum temperature is 84.1 degrees F. The highest temperature ever recorded at Newark was 105 degrees on July 8, 1993 (NRCS Accessed 2006). All stations in New Jersey have registered readings of 100 degrees F or higher and have records of 0 degrees F or below. The Central Zone is characterized by 15-20 days with temperatures above 90 degrees F (ONJSC Accessed 2006).

The average winter temperature measured at Newark is 34.3 degrees F. The average daily minimum winter temperature is 27.1 degrees F. The lowest temperature on record is -8 degrees at Newark on January 21, 1985 (NRCS Accessed 2006). Temperatures of zero or below occur in one winter out of four. On average below freezing temperatures first occur at the end of October or early November in autumn and at mid-April in spring (NOAA, NCDC Accessed 2006).

In the State of New Jersey, the average annual precipitation ranges from about 40 inches along the southeast coast to 51 inches in north-central parts of the state (ONJSC Accessed 2006). Average annual



total precipitation at Newark is 46.27 inches. About 26-28 inches, approximately 53 percent, usually occurs between May and October (NRCS Accessed 2006). Atlantic coastal storms called Northeasters, usually occurring in the fall and winter, last for a period of two days and often generate one to two inches of precipitation (NOAA, NCDC Accessed 2006). An average of 26 days with thunderstorms is experienced in Essex County (NRCS Accessed 2006). As mentioned, adiabatic warming from downslope winds reduces the number occurring in close proximity to the Newark monitoring station (NOAA, NCDC Accessed 2006).

Snowstorms in Essex County produce an average of 25 inches of snowfall. The record snowfall at the Newark station was 18 inches on January 7, 1996. Snowstorms occur at Newark 31 times per year, on average (NRCS Accessed 2006). Two to five snowstorms per year are associated with 4 inches or more of snow. Half of all winters are characterized by snowstorms producing 8 inches or more. The frequency and intensity of snow storms and the duration of snow cover increase dramatically within a few miles to the west of the station and may be greater in Maplewood Township (NOAA, NCDC accessed 2006).

The average temperature in June 2006 was 70.9 degrees Fahrenheit. This was 1.9 degrees Fahrenheit warmer than the 1901-2000 (20th century) average, the 18th warmest June in 112 years. New Jersey temperature has tended to rise 0.1 degrees Fahrenheit per decade over the period of record, which is 1895 to present. Annual precipitation rates have increased 0.03 inches per decade trend for the period of record (NOAA 2006).

2.2 Air Quality

The Federal Clean Air Act requires each state to attain and maintain specified air quality standards. Ambient Air Quality Standards have been promulgated by the federal government and by New Jersey for particulate matter (PM), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃) and lead. The New Jersey standards are generally the same as the federal standards for these pollutants. Primary air quality standards are set to protect human health and secondary standards are set to protect human welfare.



The Township of Maplewood, Essex County is located within the Southern Metropolitan Air Quality Index Reporting Region. Real-time air quality data is available on the NJDEP Air Monitoring web site. Yearly reports are available from the NJDEP for the following air pollutants: CO, PM, NO₂, O₃, SO₂, and Smoke Shade. Information from the United States Environmental Protection Agency (EPA) Air Data web site also contains information on air pollutant levels for the State of New Jersey (USEPA Office of Air and Radiation 2006).

Maplewood Township is located in New Jersey's Southern Metropolitan Air Quality Index Region. Pollutants are measured at sampling stations in Essex, Hudson and Union Counties, which together comprise New Jersey's Southern Metropolitan Air Quality Index Region. The air quality sampling stations in this region are located in Bayonne, East Orange, Elizabeth, the Elizabeth Lab, Jersey City and the Jersey City Firehouse (NJDEP Bureau of Air Monitoring 2004).

New Jersey air quality has generally been improving over the last decade or so. With the exception of ozone, the Federal and State Air Quality Standards are rarely exceeded. Maplewood Township is located within the Federal Ozone Non Attainment Area, where federal ozone standards are not met (USDOT, FHWA 2006). At ground level, ozone is considered an air pollutant that can have serious health effects. Ground level ozone is created when nitrogen oxides and volatile organic compounds (VOCs) react in the presence of sunlight and heat. Nitrogen oxides are primarily emitted by motor vehicles, power plants, and other sources of combustion. VOCs are emitted from motor vehicles, chemical plants, factories, consumer and commercial products, and natural sources. Because ozone needs sunlight and heat to form, it is mainly a daytime problem during the summer (NJDEP Bureau of Air Monitoring 2004). By June of 2010, New Jersey is required to meet the Federal 8-hour ozone standard. By June 2007, the state must submit a plan to achieve emission reductions of pollutants that contribute to ozone concentrations (NJDEP, Bureau of Air Monitoring 2005).

2.3 *Physiographic Landscape*

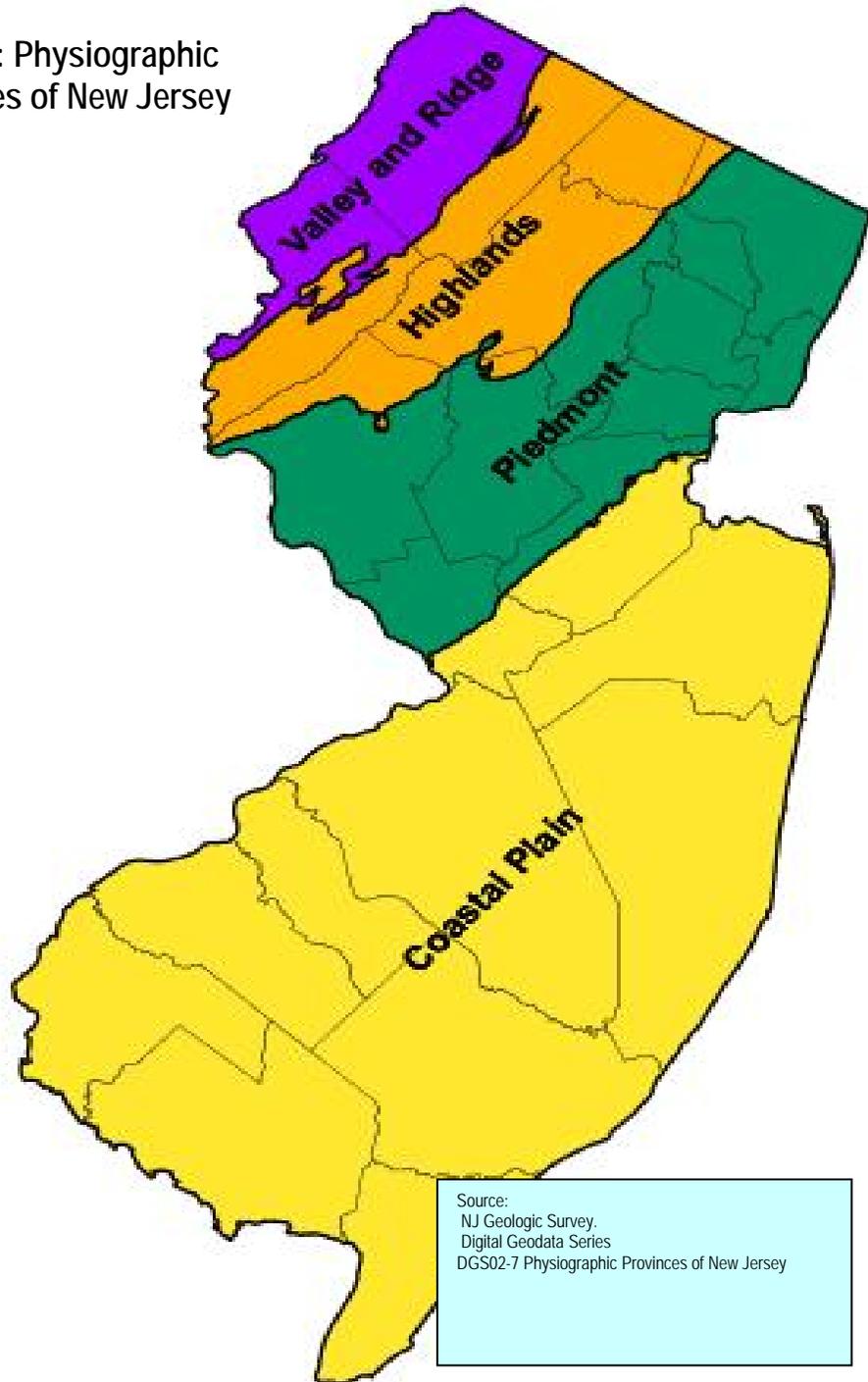
Areas that have similar rock types, geologic structures, landforms, and histories are organized into regions called Physiographic Provinces. New Jersey has five provinces, which make it complex State for its small size. From northwest to southeast across the State, the provinces are (1) Valley and Ridge, (2) Highlands,



(3) Piedmont, and (4) Coastal Plain. Maplewood is located in the Piedmont Physiographic Province, which is part of a larger belt of rock that extends from the Hudson River in the north into Virginia, in the south. The Piedmont is described as nearly flat with some gently rolling hills.



Figure 2: Physiographic Provinces of New Jersey



Source:
NJ Geologic Survey.
Digital Geodata Series
DGS02-7 Physiographic Provinces of New Jersey

County boundaries for reference only.



The Piedmont can be contrasted with the areas to the north, which are called the Highlands and Valley and Ridge, to the north of the Highlands. Each name is descriptive of the rock belt that it identifies. South of the Piedmont is found the Inner and then further south, the Outer Coastal Plain.

In general, elevations in the Piedmont are close to sea level and the underlying rock is less resistant to erosion than the harder rock of the Highlands to the north. However, there are some harder rock ridges remaining, namely, the Palisades and the Watchung Mountains. The First Watchung Mountain traverses the northwesterly portion of Maplewood Township.

2.4 Topography and Slopes

The topography of Maplewood Township is variable. The lowest elevation of approximately 100 feet above mean sea level occurs in the floodplain of the East Branch of the Rahway River where the River crosses the Township's southern boundary. The highest elevation can be found at about 540 feet at top of the First Watchung Mountain which traverses the South Mountain Reservation. Watchung is a Lenape word meaning high hills (Essex County Parks 2006). As shown on the Soils and Slopes Map (Figure 3), included in this document, the steepest slopes of 35 to 60 percent occur to the south of Crest Drive within the South Mountain Reservation (check and see if map updated, there is also a 25 to 60 percent slope category). The majority of the South Mountain Reservation is characterized by slopes ranging from 8 to 35 percent slopes.

The easterly portion of Maplewood Township exhibits less extreme relief. Slopes ranging from 0 to 8 percent are more common. Most of this portion of the Township slopes toward the East Branch of the Rahway River. The far easterly part of the township contains a lower ridge which rises 260 to 280 feet above mean sea level. This ridge runs from Courter Avenue east to Norfolk, and northeasterly to Highland Avenue near Parker Avenue. Beyond that ridge, land slopes toward Lightning or Irvington Brook to the east. The low elevation in this portion of the Township is 120 feet at Stuyvesant Avenue near the Union Township border (PPSA 2004).



2.5 Geology

The Piedmont Physiographic Province, in New Jersey, is composed primarily (95%) of the Newark rift basin. Two major events in geologic history set the stage for the creation of the Newark rift basin. First the assembly of the supercontinent Pangea, which involved the collision of Africa and North America, caused the mountain-building episode that created the Appalachian Mountains, called the Appalachian Orogeny. Later the supercontinent began to pull apart along the Ramapo fault, which forms the northwestern boundary of the Newark rift basin.

The majority of Maplewood Township is underlain by the Passaic Formation, which was formed from lake sediments laid down during the Lower Jurassic and Upper Triassic Periods. This formation is comprised of interbedded shale, siltstone, sandstone and conglomerate. The majority of the rock strata are red in color indicating oxygen-rich conditions. Strata consisting of gray and black shales and siltstones are interbedded with the red layer. The darker rock indicates the quiet low-oxygen conditions in a deep lake environment (Schilische 2006).

The Orange Mountain Basalt overlies the Passaic Formation in the western portion of the Township (Drake, et al 1996). This formation comprises the First Watchung Mountain and is derived from Early Jurassic tholeiitic lava flows (Ghatge and Hall 1991). Tholeiitic basalts are found in oceanic ridges, where they were once subject to partial melting at shallow depths (Kauffman 1990). Prior to the volcanic activity that formed the Watchung Mountain the pre-glacial Passaic River traversed the alignment of the Mountains. Maplewood lies to the northeast of this valley, which has developed into an important aquifer (Ghatge and Hall 1991).

2.6 Soils

The term soil is used to describe the earthy material that is generally found in the garden. Upon greater reflection, it becomes apparent that there is more to the story. New Jersey is a small state but also a long state which allows it to display a variety of processes which have affected land masses since the beginning



of time. The processes have created landforms and topography, which are characteristic of a given area. The eastern coast of the United States has undergone mountain building with volcanic eruptions followed by weathering from storms and glaciers. The differences in the bedrock is reflected in the end products which now remain and are called soil.

In river valleys, water has cut into the rock more deeply than the weathering which has affected surrounding land. It is the scouring and weathering of rock along with movements of the plates generating volcanic action plus the travel of glaciers which abrade rock surfaces that contribute to the formation of soils. Plant growth and activities of man have added to the complexity of the soil forming process. The destructive processes generate small rock fragments that collect as soil.

The United States Department of Agriculture has taken the lead in describing the characteristics of soils in New Jersey. Because of the complexity, soils are described as groups with similar characteristics, often including location in the name. (NRCS 2006)

Among the soils described in Maplewood, the **Boonton Series** is represented. This soil consists of very deep, moderately well drained soils that formed in glacial till. The till is composed of fragments of red sandstone, shale, basalt, and diabase. Generally, these soils have a gravelly structure and break up readily when squeezed in the palm of the hand. Gravel sizes vary and are included in the name, along with presence of slopes.

In Maplewood, the following series are found in this map unit.

- Boonton loam (BogCc), 8 to 15 percent slopes, extremely stony
- Boonton loam (BogBc), 0 to 8 percent slopes, extremely stony
- Boonton loam (BogDc), Boonton loam, 15 to 35 percent slopes, extremely stony

- Boonton loam (Bog B), 3 to 8 percent slopes, fragipan at a depth of 20-36 inches, 10- 46 inches thick, non cemented, risk of corrosion in concrete is high.
- Boonton – Urban land complex (BowrC), red sandstone lowland, 8 to 15 percent slopes
- Boonton silt loam (BooB), red sandstone lowland, 3 to 8 percent slopes
- Boonton silt loam (BooC), red sandstone lowland, 8 to 15 percent slopes
- Boonton silt loam (BooBc), red sandstone lowland, 0 to 8 percent slopes, extremely stony
- Boonton – Urban land complex (BowrB), red sandstone lowland, 0 – 8 percent slopes



- Urban land, Boonton substratum (URBOOBO), 0 – 8 percent slopes, red sandstone lowland
- Urban land – Boonton complex (USBOOB), red sandstone lowland, 0 to 8 percent slopes

The **Dunellen Series**, which are described as very deep, well drained soils that formed in acid stratified material on outwash plains and stream terraces, are represented by the following.

- Dunellen – Urban land complex (DuuB), 0 – 8 percent slopes
- Dunellen sandy loam (DunB), 3 to 8 percent slopes

The **Haledon Series** is distinguished by very deep, somewhat poorly drained soils that formed in glacial till. These soils are found in long, narrow depressions. Gravel and cobbles are found and described in the series name.

- Haledon silt loam (HanBc), 0 to 8 percent slopes, extremely stony is the only member of this group described in the Township.

The **Peckmantown** series consists of very deep, well drained soils that formed in stratified glaciolacustrine and glaciofluvial sediments overlying glacial outwash derived mostly from basalt, red sandstone, and granitic gneiss. They are moderately deep to a fragipan. These soils are common in highly urbanized areas, generally in northeast New Jersey.

- Peckmantown silt loam (PecmCc), 8 to 15 percent slopes, extremely stony

Tunkhannock Series consists of very deep, well to somewhat excessively drained soils formed in water-sorted glacial material derived from reddish sandstone, siltstone, and shale. Permeability is moderately rapid. The potential for surface runoff is low to very high. The series is found in northern Pennsylvania, New Jersey and New York.

- Tunkhannock fine sandy loam (TunKE), 25 to 60 percent slopes
- Yalesville – Holyoke complex (YaohEh), 35 to 60 percent slopes, very rocky

Udifluvents consist of deep somewhat poorly drained, and well drained loamy soils on flood plains that generally are 3 to 8 feet above normal stream flow. These soils formed in sediment derived mainly from



glacial till, granite gneiss, and limestone. The sediment washed from the nearby uplands. Natural fertility of these soils is high. Streams generally overflow on these soils at least once each year.

- Udifluvents (UcdAt) 0 to 3 percent slopes, frequently flooded

Udorthents encompass deep and well drained soils formed in material transported by human activity.

- Udorthents Dunellen substratum (UddunB), 0 – 8 percent slopes

Urban land descriptions represent disturbance in the landscape and are found in highly urbanized areas. The preparation and degree of disturbance generally reflect the density of development. In residential areas of single family homes, 50 to 90 percent of the acreage is areas in which 1 to 5 feet or more of the soil has been removed or buried during construction. Some of the soil is under structures or paving.

- Urban land, Dunellen substratum (URDUNB), 0 to 8 percent slopes
- Urban land – Dunellen complex (USDUNB), 0 to 8 percent slopes

3.0 Water Resources and Conditions

3.1 *Aquifers and Aquifer Recharge*

According to the map entitled “Aquifers of New Jersey,” (Herman, et al 1998) the Township of Maplewood is underlain by the Brunswick Aquifer and Basalt. A small area in the southeasterly portion of the Municipality is characterized by glacial till deposits (Herman, et al 1998). The Brunswick Formation consists of approximately 6,000 feet of shale with local occurrences of sandy and pebbly consolidated beds. Groundwater is retained and moves through a network of joints and fractures in the rock. Well yields range from 35 to 820 gallons per minute (gpm) in Essex County. The most productive wells have been drilled to depths of between 200 and 500 feet deep (USEPA 2006).



The Basalt Formation, which crops out as the First Watchung Mountain in the South Mountain Reservation in Maplewood serves as an aquifer for a number of local communities. Water occurs in gas-created vesicles and fractures in the rock. In Essex County wells drilled into this formation, wells yield from 7 to 400 gpm (USEPA 2006).

Pleistocene glacial deposits, which also occur in Maplewood Township are the largest source of ground water in both Morris and Essex Counties. Wells yield ranges from 20 to 2,200 gpm. This aquifer is part of the Buried Valley Aquifer System. Meltwater from glacier filled pre-existing valleys with coarse-grained sands and gravels. Glacial till and/or lake sediments were deposited on top of the sands and gravels (USEPA 2006).

3.2 Areas of High Water Table

Seasonal high water tables that occur near the ground surface pose limitations for development. High water tables can cause wet basements, necessitating sump pumps in basements. Where public sewers are unavailable, high water tables cause problems for septic systems. In addition, water tables that are close to the ground surface can be easily contaminated with lawn chemicals and leaking fuel tanks. The areas in Maplewood Township with a high water table are depicted on Figure 4. In general, the seasonal high water tables are close to the surface (depth of 20 to 36 inches) in the majority of Maplewood Township. No information is available for the soils located along waterways in the Township; however, these areas are generally subject to flooding or contain wetlands and are not suitable for development.

3.3 Wetlands

Wetlands occur between dry uplands and land permanently inundated with water (USFWS 1985). Activities in wetlands have been regulated under Section 404 of the Clean Water Act, since its passage in 1972. For the purpose of the regulation of wetlands, the Federal definition follows. Wetlands are

“Those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil condition” (EPA, 40 CFR 230.3 and CE 33 CFR 328.3).



The New Jersey Department of Environmental Protection has taken over the regulation of wetlands in the State. Wetlands which are regulated under New Jersey's Freshwater Wetlands Protection Act (N.J.A.C. 7:7A) are identified and delineated using the Army Corps of Engineer's three-parameter approach. Wetlands must exhibit evidence that the seasonal high water table occurs near the surface, wetlands vegetation must be present and evidence that water stands or flows through the area should be evident (Federal Interagency Committee for Wetland Delineation 1989).

The New Jersey Department of Environmental Protection (NJDEP) maps wetlands. This wetland mapping is depicted along with floodprone area mapped by the US Geological Survey on Figure 5. The following areas contain mapped wetlands in Maplewood Township:

- Along the Rahway River in the South Mountain Reservation
- Along the East Branch of the Rahway River in Memorial Park
- Near Clinton Elementary School located at the boundary of the Village of South Orange
- An isolated area within Maplecrest Park
- Within the Winchester Gardens Continuing Care Retirement Community.

Due to the intensity of development in Maplewood, most wetland areas located outside of the South Mountain Reservation have been disturbed. Before development or redevelopment can proceed, areas that may contain wetlands must be reviewed to determine if areas are present that meet the NJDEP criteria for a wetland. (PPSA 2004). Development in lands that contain jurisdictional wetlands will require permits from the NJDEP to perform any regulated activities.

3.4 Watersheds

The United States is sub-divided into successively smaller hydrologic units, with each unit identified by a unique hydrologic unit code (HUC). Streams in New Jersey are further classified into Watershed Management Areas. A watershed collects all the surface water which falls within the confines of the highest points of land and "funnels" it to the lowest point which we call a stream. Watershed Management Area #7 includes large portions of Essex, Union and Middlesex Counties. Maplewood is included in WMA #7 which drains to the Rahway and the Elizabeth Rivers.



Maplewood contributes drainage to the Rahway River Basin via the East and West Branches of the Rahway River / Woodbridge Creek, contained in HUC 11. The eastern third of the Municipality contributes drainage to the Elizabeth River via the Irvington (Lightning) Brook. Smaller divisions into HUC 14 subwatersheds are delineated on the Watershed Map.

Most of Maplewood Township is situated within the watershed of the East Branch of the Rahway River. A small portion of the easternmost part of the Township is within the Elizabeth River Watershed (see Figure 6). Both rivers discharge to the Arthur Kill; therefore they are subwatersheds of the Arthur Kill. Under the New Jersey Department of Environmental Protection's Division of Watershed Management, the Arthur Kill Watershed comprises Watershed Management Area #7. This Watershed Management Area includes the majority of Essex, Union and Middlesex Counties (NJDEP, Division of Watershed Management. 2006b).

A watershed includes all of the land that drains to a particular waterbody. The drainage areas of two different waterbodies are separated by topographic high points. Watersheds can be very large or very small, depending on the waterbody of interest. Watersheds are important because human activities in any portion of the land that drains to a waterbody can affect its health. In an intensely developed municipality, such as Maplewood Township, land with natural vegetation is replaced by paving. Rainwater tends to run off quickly from these hard surfaces instead of gradually seeping into the soil and recharging aquifers. Water from rainstorms enters streams and rivers at a faster rate leading to increased flooding during rainstorms. Storm water runoff in urban areas collects pollutants as it moves across paved surfaces. Leaked petroleum products and heavy metals from brake frictions are deposited on paved surfaces by automobiles. Air pollution from vehicular exhaust and other sources settles to the ground. Pesticides and fertilizers are applied to lawns. All of these pollutants are found in storm water runoff and are transported to streams and to other waterbodies in developed areas (NJDEP Division of Watershed Management 2006a).

Within the Township of Maplewood, as well as in both the Rahway and Elizabeth Watersheds, residential, commercial and industrial land uses predominate (NJDEP, Division of Watershed Management. 2006b). The US Geological Survey's National Water Quality Assessment Program (NAWQA) has studied the relationship of land use to the contamination of sediments. As development approaches 25%, streams



show considerable impairment. The Rahway and Elizabeth Rivers were included in this study. Several main categories of pollutants were found to be closely associated with residential/urban land use.

Levels of copper, lead and zinc in riverbed sediments were greater in areas with higher human populations. Higher chromium levels are found in rivers with increased urban land use. Volatile organic compounds (VOC) such as methyl *tert*-butyl ether (MBTE), acetone, naphthalene, chloroform, tetrachloroethene and trichloroethene were the most common VOCs found in New Jersey waters. These compounds are directly related to human activities. Direct industrial or wastewater discharges and leaking underground fuel storage tanks represent point sources of VOCs in a watershed. MBTE and other compounds found in vehicle and industrial emission to the atmosphere can be washed from the air and are present in runoff to waterbodies when it rains. Of the studied waterways, the Rahway River sediments are associated with some of the highest levels of these compounds (O' Brien, Reiser & Gylling 1997).

Chlorinated organic compounds and pesticides were two other categories of contaminants that occur in sediments. The USGS found that the number of pesticides detected rose as the percentage of undeveloped land decreased. The highest frequency of detection of pesticides occurred in agricultural watersheds, but higher levels of several pesticides were more associated with urban land use. The concentrations of prometon, carbaryl, diazinon, DCPA, chlorpyrifos, tebuthiuron, trifluralin, malathion, dieldrin and napropamide were highest in urban watersheds. Some of these pesticides are associated with professional lawn and golf course maintenance and some are used for termite control (Reiser and O'Brien 1999).

The most widely distributed chlorinated organic compounds found in New Jersey river sediments result from the persistence of currently banned compounds, such as DDT and PCBs. The breakdown products of DDT, DDE and DDD, are also commonly detected. Chlordane and dieldrin occurred in 80 to 100 percent of samples from urban or densely populated watersheds. The highest levels of PCBs were detected in urban areas (Stackelberg 1996). The persistence of these compounds in stream sediments clearly illustrates that the activities of humans within watersheds have far-reaching and long-lasting consequences. Effects can last for generations. The importance of the watershed perspective on how we regulate and manage our daily activities is of the utmost importance.



3.5 Surface Water Quality and Quantity

The eastern slope of the First Watchung Mountain drains to the East Branch of the Rahway River. A small portion of the western slope of the mountain lying within Maplewood drains toward the West Branch of the Rahway River. Lightning Brook, which is tributary to the Elizabeth River runs along a portion of Maplewood Township's easterly boundary and within an area east of Jacoby Street within the Township (FEMA Firm Map). Much of the Elizabeth River is channelized for flood control purposes (NJDEP, Division of Watershed Management. 2006b)

The Surface Water Quality Standards N.J.A.C. 1:9B categorize the appropriate uses to be preserved in the waterbodies of the State. The East and West Branches of the Rahway River and their tributaries in Maplewood and all of the Elizabeth River and its tributaries have been designated as FW2-NT waters. This designation indicates that these are fresh waters and not trout production or trout maintenance waters. These waters are generally not suitable for trout because of their physical, chemical, or biological characteristics, although they may be suitable for a variety of other fish species. The following uses should be preserved in all FW2 waterbodies:

- Maintenance, migration and propagation of the natural and established biotas;
- Primary and secondary contact recreation;
- Industrial and agricultural water supply;
- Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection;
- Any other reasonable uses (NJDEP 2005).

In general, the rivers of Essex County are polluted and do not attain the water quality necessary to adequately support the designated uses. Both point source discharges from industrial sites and wastewater treatment plants as well as non-point sources are responsible for the degradation. Elevated fecal coliform levels in the Rahway River, its West Branch and the Elizabeth River render them unsuitable for recreational use (NJDEP 2004). Toxic discharges, low dissolved oxygen levels and total dissolved solids impair aquatic



life in the Rahway River. Total algae levels are above standards. Algal blooms, erosion, elevated phosphorus, and sedimentation diminish the aesthetic and aquatic life support value of the Elizabeth River.

The USGS operates gaging stations on the Rahway and Elizabeth Rivers. Real-time information on the volume of water flowing past the gaging stations is available on the USGS web site. The numbers of the gaging stations is provided below.

- 01393450 Elizabeth River at Ursino Lake, at Elizabeth, NJ
- 01394500 Rahway River near Springfield, NJ
- 01395000 Rahway River at Rahway, NJ (USGS Accessed 2006).

3.6 *Floodways and Floodplains*

The USGS has documented floodprone areas along the entire length of the East Branch of the Rahway River, and along a portion of the West Branch of the Rahway within the South Mountain Reservation (see Figure 5). Additional areas within the 100-year and 500-year floodplains of waterways in Maplewood are shown on the FEMA Flood Insurance Rate Map for the Township. The most significant flooding occurs along the East Branch of the Rahway River, but another important area is located along the boundary of the Township with the Town of Irvington, from Elmwood Avenue in the north to Berkley Street in the south. This area is associated with the floodplain of Irvington (Lightning) Brook. The floodplain of Crooked Brook, a tributary to the East Branch of the Rahway River, begins at Jefferson Avenue and extends along Brookside Road, Inwood Road and Maplewood Road to its confluence with the East Branch. The FEMA map shows two low-lying, isolated areas that flood. One is located along Boyden Avenue, just south of Woodside Road to midway between Midland Boulevard and Elmwood Avenue. The other isolated floodplain can be found on Parker Avenue, east of Boyden Avenue.

In March 1998, the U.S. Army Corp of Engineers was authorized to study the Rahway Drainage Basin and found environmental degradation along with opportunities for restoration. Flooding in the basin has been caused by rapid development with a large increase in storm water runoff. The NJDEP regulates activities in flood-prone areas under the Flood Hazard Area Control Act. Most disturbances to the floodplain require a



Stream Encroachment Permit from the State. In addition, the Township of Maplewood enacted a comprehensive Flood Damage Prevention Ordinance in 1987, which regulates new development and redevelopment within designated flood hazard areas (PPSA 2004).

4.0 Biological Resources

Biological resources include botanical (plant) and zoological (animal) species of an area. Botanical resources include the flora (e.g., checklist and analysis of species), and vegetation (plant communities). Zoological resources include the invertebrate and vertebrate animals and animal communities. Rare, threatened, and endangered species and species of special concern also are considered within this section.

4.1 Botanical Resources

The majority of Maplewood Township is developed land. Natural plant communities are rare except within the South Mountain Reservation. The floodplains of the East Branch of the Rahway River and the Elizabeth River are also likely to contain natural communities. Plant communities can be broadly divided into upland and wetlands communities. Upland communities can be mesic (midway on the soil moisture gradient) or xeric (dry). The common mesic forest communities occurring in the Piedmont Physiographic Province include Mixed Oak Forest and the Hemlock-Mixed Hardwood Forests. The predominant freshwater wetland communities observed in Northern New Jersey include Freshwater Marshes, Swamp and Floodplain Forests (Collins & Anderson 1994).

Different communities generally grade into each other. For instance the common and widespread Mixed Oak Forest becomes a Chestnut Oak Forest, when conditions are drier or a Swamp Forest under moister conditions. The north-facing slopes and ravines of the Watchung Mountains, which includes the First Watchung Mountain within the South Mountain Reservation, often contain Hemlock-Mixed Hardwood Forests (Collins & Anderson 1994).



Successional communities, which develop after a site has been disturbed, begin as herbaceous plant communities, which are later colonized by shrubs and Red Cedar trees (Collins & Anderson 1994).

The plant communities that may occur in the Piedmont Physiographic Province have been further subdivided by Thomas Breden (1989). Chestnut Oak Forest, Mesic Hemlock-Mixed Hardwood Forest, Dry-Mesic Inland Mixed Oak Forest, Traprock Glade/ Rock Outcrop Community, Inland Red Maple Swamp, Floodplain Forest, Northern New Jersey Shrub Swamp, Inland Graminoid Marsh, River Bar Community (Breden 1989).

The tables below list the typical plant species that occur in each of the major plant communities potentially represented in Maplewood Township.

The Mixed Oak Forest is the most common upland plant community in the Piedmont Physiographic Province of the State of New Jersey. These forests attain canopy heights of 60 to 100 feet with three dominant oak species – Red Oak, Black Oak and White Oak. The forest type was known as the Oak-Chestnut Forest before the die-off of the American Chestnut in the early 1900s (Collins & Anderson 1994). Deciduous forests predominate in the South Mountain Reservation. A few parcels contain deciduous forest cover in the portion of the Township east of the East Branch of the Rahway River (see Figure 7).



Table 1: Plants of the Mixed Oak Forest Community (after Collins and Anderson 1994, pp. 112-113)

Common Name	Scientific Name	Common Name	Scientific Name
Dominant Trees		Dominant Trees	
White Oak	<i>Quercus alba</i>	Black Oak	<i>Quercus velutina</i>
Red Oak	<i>Quercus rubra</i>		
Other Trees		Other Trees	
Chestnut Oak	<i>Quercus prinus</i>	American Beech	<i>Fagus grandifolia</i>
Scarlet Oak	<i>Quercus coccinea</i>	White Ash	<i>Fraxinus americana</i>
Shagbark Hickory	<i>Carya ovata</i>	Black Cherry	<i>Prunus serotina</i>
Bitternut Hickory	<i>Carya cordiformis</i>	Flowering Dogwood	<i>Cornus florida</i>
Pignut Hickory	<i>Carya glabra</i>	Ironwood	<i>Carpinus caroliniana</i>
Sugar Maple	<i>Acer saccharum</i>	Sassafras	<i>Sassafras albidum</i>
Red Maple	<i>Acer rubrum</i>	Others	
Black Birch	<i>Betula lenta</i>		
Shrubs and Vines		Shrubs and Vines	
Maple-leaved Viburnum	<i>Viburnum acerifolium</i>	Black Huckleberry	<i>Gaylussacia baccata</i>
Arrowwood	<i>Viburnum dentatum</i>	Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Pinxter Flower	<i>Rhododendron periclymenoides</i>	Others	
Mountain Laurel	<i>Kalmia latifolia</i>		
Herbs		Herbs	
Mayapple	<i>Podophyllum petatum</i>	Garlic Mustard	<i>Allaria petiolata</i>
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	White Baneberry	<i>Actaea pachypoda</i>
Wood Anemone	<i>Anemone quinquefolia</i>	Hairy Solomon's Seal	<i>Polygonatum pubescens</i>
False Solomon's Seal	<i>Smilacina racemosa</i>	Christmas Fern	<i>Polystichum achrostichoides</i>
White Wood Aster	<i>Aster divaricatus</i>	Marginal Wood Fern	<i>Dryopteris marginalis</i>
Sweet Cicely	<i>Osmorhiza claytoni</i>	Bracken Fern	<i>Pteridium aquilinum</i>
Jack-in-the-Pulpit	<i>Arisaema triphyllum</i>	Many others	

On sites that are drier than the Mixed Oak Forest, the Chestnut Oak Forest becomes the dominant forest community. The conditions that foster the development of a Chestnut Oak community generally occur at higher elevations in northern New Jersey. The Chestnut Oak tolerates the more nutrient-poor conditions in the soils of rocky slopes (Collins & Anderson 1994).



Table 2: Plants of the Chestnut Oak Forest Community (after Collins and Anderson 1994, pp. 97-98)

Common Name	Scientific Name	Common Name	Scientific Name
Dominant Trees		Dominant Trees	
Chestnut Oak	<i>Quercus prinus</i>	Red Oak	<i>Quercus rubra</i>
Other Trees		Other Trees	
Black Oak	<i>Quercus velutina</i>	White Oak	<i>Quercus alba</i>
Red Maple	<i>Acer rubrum</i>	Black Birch	<i>Betula lenta</i>
Scarlet Oak	<i>Quercus coccinea</i>	Shagbark Hickory	<i>Carya ovata</i>
Pignut Hickory	<i>Carya glabra</i>	White Ash	<i>Fraxinus americana</i>
Bitternut Hickory	<i>Carya cordiformis</i>	Sassafras	<i>Sassafras albidum</i>
Black Cherry	<i>Prunus serotina</i>	Downy Juneberry	<i>Amelanchier arborea</i>
American Chestnut	<i>Castanea dentata</i>	Few others	
Shrubs and Vines		Shrubs and Vines	
Early Lowbush Blueberry	<i>Vaccinium pallidum</i>	Black Huckleberry	<i>Gaylussacia baccata</i>
Deerberry	<i>Vaccinium stamineum</i>	Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>
Pinxter Flower	<i>Rhododendron periclymenoides</i>	Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Mountain Laurel	<i>Kalmia latifolia</i>	Winged Sumac	<i>Rhus copallina</i>
Scrub Oak	<i>Quercus illicifolia</i>	Maple-leaved Viburnum	<i>Viburnum acerifolium</i>
Sweet Fern	<i>Comptonia peregrina</i>	Few others	
Herbs		Herbs	
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Bracken Fern	<i>Pteridium aquilinum</i>
Hairgrass	<i>Deschampsia flexuosa</i>	Wintergreen	<i>Gaultheria procumbens</i>
White Wood Aster	<i>Aster divaricatus</i>	Rattlesnake Weed	<i>Hieracium venosum</i>
False Solomon's Seal	<i>Smilacina racemosa</i>	Spotted Wintergreen	<i>Chimaphila maculata</i>
Marginal Wood Fern	<i>Dryopteris marginalis</i>	Cow-wheat	<i>Melampyrum lineare</i>
Few others			

The Hemlock-Mixed Hardwood Forest can be found in the ravines and north-facing slopes of traprock formations, such as the basalt outcrops in the South Mountain Reservation. Hemlocks usually comprise more than 50 percent of the trees. This species can attain a height of 100 feet. The acidity of the decaying hemlock needles create condition that few understory species can tolerate (Collins & Anderson 1994). The coniferous forests mapped on the Land Use Map (Figure 7) for Maplewood Township are likely to consist of Hemlock-Mixed Hardwood Forest.



Table 3: Plants of the Hemlock-Mixed Hardwood Forest (after Collins and Anderson 1994, pp. 121-122)

Common Name	Scientific Name	Common Name	Scientific Name
Dominant Trees		Other Trees	
Eastern Hemlock	<i>Tsuga canadensis</i>	Black Oak	<i>Quercus velutina</i>
Other Trees		Red Oak	<i>Quercus rubra</i>
Black Birch	<i>Betula lenta</i>	Basswood	<i>Tilia americana</i>
Yellow Birch	<i>Betula alleghaniensis</i>	Red Maple	<i>Acer rubrum</i>
Shrubs and Vines		Shrubs and Vines	
Maple-leaved Viburnum	<i>Viburnum acerifolium</i>	Pinxter Flower	<i>Rhododendron periclymenoides</i>
Mountain Laurel	<i>Kalmia latifolia</i>	Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>
Early Lowbush Blueberry	<i>Vaccinium pallidum</i>	Spicebush	<i>Lindera benzoin</i>
Witch Hazel	<i>Hamamelis virginiana</i>	Few others	
Herbs		Herbs	
Spotted Wintergreen	<i>Chimaphila maculate</i>	Starflower	<i>Trientalis borealis</i>
Stemless Lady's-Slipper	<i>Cypripedium acaule</i>	Partridgeberry	<i>Mitchella repens</i>
Trailing Arbutus	<i>Epigaea repens</i>	Shining Clubmoss	<i>Lycopodium lucidulum</i>
Spinulose Wood Fern	<i>Dryopteris carthusiana</i>	Christmas Fern	<i>Polystichum achrostichoides</i>
Hay-scented Fern	<i>Dennstaedtia punctiobula</i>	Few others	
Herbs		Herbs	
Broom Moss	<i>Dicranum scoparium</i>	Tree Moss	<i>Climacium americanum</i>
Fern Moss	<i>Thuidium delicatulum</i>	Hylocomium	<i>Hylocomium splendens</i>
Others			

The driest and most nutrient-poor communities can be found in the Piedmont Physiographic Province on exposed rock ridges and outcrops. Soils are thin and subject to erosion and leaching with the bedrock at or near the surface. These communities will occur on the basalt outcrops and ridgelines in the South Mountain Reservation. They potentially occur within the mapping units including Mixed Forests, Deciduous forest or Coniferous Forests (see Figure 7).



Table 4: Traprock Glade/Rock Outcrop Communities (after Collins and Anderson 1994, pp. 105-106 and Breden 1989)

Common Name	Scientific Name	Common Name	Scientific Name
Dominant Trees		Dominant Trees	
Pitch pine	<i>Pinus rigida</i>	Chestnut Oak	<i>Quercus prinus</i>
Black Birch	<i>Betula lenta</i>	Fire Cherry	<i>Prunus pensylvanica</i>
Trembling Aspen	<i>Populus tremuloides</i>	Red Oak	<i>Quercus rubra</i>
Hickories	<i>Carya spp.</i>	Red Cedar	<i>Juniperus virginiana</i>
Sour Gum	<i>Nyssa sylvatica</i>	Sycamore	<i>Platanus occidentalis</i>
River Birch	<i>Betula nigra</i>	Shadbush	<i>Amelanchier canadensis</i>
Others			
Shrubs and Vines		Shrubs and Vines	
Early Lowbush Blueberry	<i>Vaccinium pallidum</i>	Black Huckleberry	<i>Gaylussacia baccata</i>
Mountain Laurel	<i>Kalmia latifolia</i>	Sheep Laurel	<i>Kalmia angustifolia</i>
Black Chokecherry	<i>Aronia melanocarpa</i>	Winged Sumac	<i>Rhus copallina</i>
Scrub Oak	<i>Quercus illicifolia</i>	Witch Hazel	<i>Hamamelis virginiana</i>
Buttonbush	<i>Cephalanthus occidentalis</i>	Downy Arrowwood	<i>Viburnum rafinesquianum</i>
Few others			
Herbs		Herbs	
Wild sarsaparilla	<i>Aralia nudicaluis</i>	Bristly sarsaparilla	<i>Aralia hispida</i>
Bracken Fern	<i>Pteridium aquilinum</i>	Marginal Woodfern	<i>Dryopteris marginalis</i>
Common polypody	<i>Polypodium virginianum</i>	Sweet Goldenrod	<i>Solidago odorata</i>
<i>Pale cordyalis</i>	<i>Cordyalis sempervirens</i>	Pennsylvania Sedge	<i>Carex pensylvanica</i>
Bastard Toadflax	<i>Comandra umbellate</i>	Hairgrass	<i>Deschampia flexuosa</i>
Poverty Oatgrass	<i>Danthonia spicata</i>	Little Bluestem	<i>Schizachyriumscoparium</i>
Hoary Mountain-Mint	<i>Pycnanthemum incanum</i>	Leonard's Skullcap	<i>Scutellaria leonardii</i>
Whorled Milkweed	<i>Asclepias verticillata</i>	Fourleaf Milkweed	<i>Asclepias quadrifolia</i>
Hairawn Muhly	<i>Muhlenbergia capillaris</i>	Dittany	<i>Cunilla origanoides</i>
Common Goldstar	<i>Hypoxis hirsuta</i>	Orangegrass	<i>Hypericum gentianoides</i>
Virginia Tephrosia	<i>Tephrosia virginiana</i>	Hairy Bedstraw	<i>Galium pilosum</i>
Few others			

Successional plant communities develop after an area has been disturbed by human activities to from natural events such as windstorms or floods. In a process called succession, most plant communities proceed through several stages. Bare ground is generally populated with a great variety of herbaceous species, many of them non-native in origin. Gradually shrubs and then trees are able to colonize the area. Continued disturbance through mowing or frequent fires can halt the process of succession, until the disturbance ceases (Collins & Anderson 1994). Some of the plant communities with less than 50% canopy closure could be successional communities. These areas are distributed throughout the Township, also occurring in the South Mountain Reservation. Old field communities are certainly successional. The



floodplain of the East Branch of the Rahway River is dominated by this community, although they occur in the developed and undeveloped portions of the Township (see Figure 7).

Table 5: Plants of the Upland Successional Community (after Collins and Anderson 1994, pp. 122-123)			
Common Name	Scientific Name	Common Name	Scientific Name
Dominant Trees		Dominant Trees	
Gray Birch	<i>Betula populifolia</i>	Black Cherry	<i>Prunus serotina</i>
Trembling Aspen	<i>Populus tremuloides</i>	Big-toothed Aspen	<i>Populus grandidentata</i>
Red Cedar	<i>Juniperis virginiana</i>	Few others	
Shrubs		Shrubs	
Staghorn Sumac	<i>Rhus typhina</i>	Smooth Sumac	<i>Rhus glabra</i>
Multiflora Rose	<i>Rosa multiflora</i>	Allegheny Blackberry	<i>Rubus allegheniensis</i>
Black Raspberry	<i>Rubus occidentalis</i>	Gray Dogwood	<i>Cornus rcemosa</i>
Autumn Olive	<i>Eleangus umbellate</i>	Few others	
Annual or Biennial Herbs		Annual or Biennial Herbs	
Common Ragweed	<i>Ambrosia artemisiifolia</i>	Nodding Foxtail	<i>Setaria faberi</i>
Yellow Foxtail	<i>Setaria glauca</i>	Wintercress	<i>Barbarea vulgaris</i>
Large crabgrass	<i>Digitaria anguinalis</i>	Wild Carrot	<i>Daucus carota</i>
Horseweed	<i>Conzya Canadensis</i>	Common Mullein	<i>Verbascum Thapsus</i>
White Sweetclover	<i>Melilotus alba</i>	Many others	
Perennial Herbs		Perennial Herbs	
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	Canada Goldenrod	<i>Solidago Canadensis</i>
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	Canada Thistle	<i>Cirsium arvense</i>
Kentucky Bluegrass	<i>Poa pretense</i>	Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Orchard Grass	<i>Dactylis glomerata</i>	King Devil Hawkweed	<i>Hieraciumcaespitosum</i>
Ox-eye Daisy	<i>Chrysanthemum leucanthemum</i>	Butter-and-eggs	<i>Linaria vulgaris</i>
Wild Bergamot	<i>Monarda fistulosa</i>	Common St. Johnswort	<i>Hypericum perforatum</i>
Common Milkweed	<i>Asclepias syriaca</i>	Many others	

One of the potential plant communities to develop in wetlands in the region of Maplewood Township is the Piedmont Swamp/Floodplain Community. These communities occur in areas of poor drainage or frequent flooding. Water may not always be visible at the surface, but a high water table only allows the growth of species that tolerate having their root systems in very wet soils (Collins & Anderson 1994). Wooded wetlands occur in the South Mountain Reservation, in Maplecrest Park, along Valley Street and along the rear of properties with frontage on Burnett Street, between Pierson Road and Maple Avenue (see Figure 7).



Table 6: Plants of Piedmont Swamp/Floodplain Communities (after Collins and Anderson 1994, pp. 138-139)

Common Name	Scientific Name	Common Name	Scientific Name
Dominant Trees		Dominant Trees	
Red Maple	<i>Acer rubrum</i>	American Elm	<i>Ulmus Americana</i>
Black Willow	<i>Salix nigra</i>	Pin Oak	<i>Quercus palustris</i>
Swamp White Oak	<i>Quercus bicolor</i>	Silver Maple	<i>Acer sacharinum</i>
Box Elder	<i>Acer negundo</i>	Sweet Gum	<i>Liquidambar styraciflua</i>
Sour Gum	<i>Nyssa sylvatica</i>	Sycamore	<i>Platanus occidentalis</i>
River Birch	<i>Betula nigra</i>	Shadbush	<i>Amelanchier canadensis</i>
Others			
Shrubs and Vines		Shrubs and Vines	
Spicebush	<i>Lindera benzoin</i>	Silky Dogwood	<i>Cornus amomum</i>
Smooth Alder	<i>Alnus serrulata</i>	Common Elder	<i>Sambucus canadensis</i>
Winterberry	<i>Ilex verticillata</i>	Arrowwood	<i>Viburnum dentatum</i>
Highbush Blueberry	<i>Vaccinium corymbosum</i>	Swamp Azalea	<i>Rhododendron viscosum</i>
Buttonbush	<i>Cephalanthus occidentalis</i>	Witch Hazel	<i>Hamamelis virginiana</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Riverbank Wild Grape	<i>Vitis riparia</i>
Poison Ivy	<i>Toxicodendron radican</i>	Japanese Honeysuckle	<i>Lonicera japonica</i>
Others			
Herbs		Herbs	
Skunk Cabbage	<i>Symplocarpus foetidus</i>	Jack-in the-Pulpit	<i>Arisaema Triphylum</i>
Marsh Marigold	<i>Caltha palustris</i>	Spring Beauty	<i>Claytonia virginica</i>
Trout Lily	<i>Erythronium americanum</i>	Tussock Sedge	<i>Carex stricta</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>	Marsh Fern	<i>Thelypteris palustris</i>
Clearweed	<i>Pilea pumila</i>	Wood Nettle	<i>Laportea canadensis</i>
Blue Flag	<i>Iris versicolor</i>	Many others	

In areas where standing water is present most of the year, freshwater marshes are likely to develop. This community is not specifically mapped on the Land Use Map, however, it is likely that some of the areas shown as old field communities along the East Branch of the Rahway River are actually occupied Freshwater Marshes.



Table 7: Plants of North Jersey Marsh Communities (after Collins and Anderson 1994, pp. 138-139)

Common Name	Scientific Name	Common Name	Scientific Name
Shrubs and Vines		Shrubs and Vines	
Buttonbush	<i>Cephalanthus occidentalis</i>	Silky Dogwood	<i>Cornus amomum</i>
Smooth Alder	<i>Alnus serrulata</i>	Common Elder	<i>Sambucus canadensis</i>
Swamp Rose	<i>Rosa palustris</i>	Meadowsweet	<i>Spiraea tomentosa</i>
Few others			
Herbs		Herbs	
Broad-leaved Cattail	<i>Typha latifolia</i>	Narrow-leaved Cattail	<i>Typha angustifolia</i>
Common Reed	<i>Phragmites australis</i>	Tussock Sedge	<i>Carex stricta</i>
Broad-leaved Arrowhead	<i>Sagittaria latifolia</i>	Swamp Loosestrife	<i>Decodon verticillatus</i>
Tickseed Sunflower	<i>Bidens spp.</i>	Pickernelweed	<i>Pontederia cordata</i>
Woolgrass	<i>Scirpus cyperinus</i>	Great Bulrush	<i>Scirpus validus</i>
Common Rush	<i>Juncus effusus</i>	Purple Loosestrife	<i>Lythrum salicaria</i>
Arrow Arum	<i>Peltandra virginica</i>	Yellow Marsh Iris	<i>Iris pseudacorus</i>
Blue Flag	<i>Iris versicolor</i>	Lizard's Tail	<i>Saururus cenusus</i>
Dotted Smartweed	<i>Polygonum punctatum</i>	Arow-leaved Tearthumb	<i>Polygonum sagittatum</i>
Water Pepper	<i>Polygonum hydropiper</i>	Bluejoint	<i>Calamagrostis canadensis</i>
Rice Cutgrass	<i>Leersia oryzoides</i>	Reed Canary grass	<i>Phalaris arundinacea</i>
Manna-grass	<i>Glyceria striata</i>	Cut-leaved Horehound	<i>Lycopus americanus</i>
Swamp Milkweed	<i>Asclepia incarnata</i>	Jewelweed	<i>Impatiens capensis</i>
Boneset	<i>Eupatorium perfoliatum</i>	Bur-reed	<i>Sparganium spp.</i>
Spike-rush	<i>Eleocharis spp.</i>	Marsh Fern	<i>Thelypteris spp.</i>
Many others			

The State's Natural Heritage Program maintains a database of rare species, including plant species. The species in the following table have been documented to occur in Essex County. Several are endangered. The South Mountain Reservation may harbor some of these species. The species labeled as endangered are species native to New Jersey, whose survival in the State or nation is in jeopardy (NJDEP, NHP 2006). The remaining species are rare, but not officially designated as threatened or endangered.



Common Name	Scientific Name	Status
Large Water-Plantain	<i>Alisma triviale</i>	Endangered
Short-Awn Meadow-Foxtail	<i>Alopecurus aequalis var. aequalis</i>	
Canada Anemone	<i>Anemone canadensis</i>	
Marsh Water-Starwort	<i>Callitriche palustris</i>	
Erect Bindweed	<i>Calystegia spithamea</i>	Endangered
Pale Sedge	<i>Carex pallescens</i>	
Scarlet Indian-Paintbrush	<i>Castilleja coccinea</i>	
Minute Duckweed	<i>Lemna perpusilla</i>	Endangered
Long-Awn Smoke Grass	<i>Muhlenbergia capillaris</i>	Endangered
Smooth Beardtongue	<i>Penstemon laevigatus</i>	Endangered
Downy Phlox	<i>Phlox pilosa</i>	Endangered
Torrey's Mountain-Mint	<i>Pycnanthemum torreyi</i>	Endangered
Low Spearwort	<i>Ranunculus pusillus var. pusillus</i>	
Shining Willow	<i>Salix lucida spp. lucida</i>	
Large-Fruit Black-Snakeroot	<i>Sanicula trifoliata</i>	Endangered
Pencil-Flower	<i>Stylothantes biflora</i>	

As the previous discussion indicates, Maplewood Township possesses a great deal of variety in its vegetation communities, in spite of the intensity of development. The protection and enhancement of these resources will allow the ecological and aesthetic benefits to the Township and its residents to be preserved..

No exceptionally large trees are listed for Maplewood Township in New Jersey's listing of large trees. The Maplewood Historic Preservation Commission has documented the presence 75-foot tall Sweetgum tree that is reported to be 200 years old on the property of the Jonas Ball House at 88 Tuscan Road (Hammarberg & Blinder 2006). Several notable trees, including a Copper Beech and several mature pines, surround historic Vaux Hall at 693 Valley Street (Chrisman & Cockman 2005).

4.2. Zoological Resources

4.2.1 Aquatic Animals

The surface waters of Maplewood Township mainly consist of freshwater rivers and streams. The vertebrate aquatic biota, or animals with backbones are the fishes. The State of New Jersey supports the populations of 85 freshwater fish. The waters of the Township are not known to support trout populations,



which require cooler, more pristine waters than those present in Maplewood's waterways. Although the Rahway River, ultimately becomes brackish and tidal before its discharge to the Arthur Kill, no evidence is available that anadromous fish, such as American eel, Herring or Shad migrate upstream and breed in the East or West Branch of the Rahway River in Maplewood (NJDEP, DFW, Bureau of Freshwater Fisheries 2000).

Common Name	Scientific Name	HP	Common Name	Scientific Name	HP
American Brook Lamprey	<i>Lampetra appendix</i>	N	Sea Lamprey	<i>Petromyzon marinus</i>	N
Rainbow Smelt	<i>Osmerus mordax</i>	N	Bowfin	<i>Amia calva</i>	I
Redfin Pickerel	<i>Esox americanus</i>	N	Eastern Mudminnow	<i>Umbra pygmaea</i>	N
Chain Pickerel	<i>Esox niger</i>	N	Northern Pike	<i>Esox lucius</i>	I
Goldfish	<i>Carassius auratus</i>	E	Muskellunge	<i>Esox masquinon</i>	I
Quillback	<i>Carpoides cyprinus</i>	N	Common Carp	<i>Cyprinus carpio</i>	E
Eastern Silvery Minnow	<i>Hybognathus regius</i>	N	Cutlips Minnow	<i>Exoglossum maxillingua</i>	N
Comely Shiner	<i>Notropis amoenus</i>	N	Golden Shiner	<i>Notemigonus crysoleucas</i>	N
Bridle Shiner	<i>Notropis bifrenatus</i>	N	Satinfin Shiner	<i>Cyprinella analostana</i>	N
Common Shiner	<i>Luxilus cornutus</i>	N	Ironcolor Shiner	<i>Notropis chalybaeus</i>	N
Swallowtail Shiner	<i>Notropis procne</i>	N	Spottail Shiner	<i>Notropis husdonius</i>	N
Fathead Minnow	<i>Pimephales promelas</i>	I	Spotfin Shiner	<i>Cyprinella spiloptera</i>	N
Blacknose Dace	<i>Rhinichthys atratulus</i>	N	Bluntnose Minnow	<i>Pimephales notatus</i>	I
Creek Chub	<i>Semotilus atromaculatus</i>	N	Longnose Dace	<i>Rhinichthys cataractae</i>	N
Grass Carp	<i>Ctenopharyngodon idella</i>	E	Fallfish	<i>Semotilus corporalis</i>	N
Creek Chubsucker	<i>Erimyzon oblongus</i>	N	White Sucker	<i>Catostomus commersoni</i>	N
White Catfish	<i>Ameiurus catus</i>	N	Northern Hog Sucker	<i>Hypentelium nigricans</i>	N
Yellow Bullhead	<i>Ameiurus natalis</i>	N	Black Bullhead	<i>Ameiurus mela s</i>	I
Channel Catfish	<i>Ictalurus punctatus</i>	I	Brown Bullhead	<i>Ameiurus nebulosus</i>	N
Margined Madtom	<i>Noturus insignis</i>	N	Tadpole Madtom	<i>Noturus gyrinus</i>	N
Banded Killifish	<i>Fundulus diaphanus</i>	N	Pirate Perch	<i>Aphredoderus sayanus</i>	N
Eastern Mosquitofish	<i>Gambusia holbrooki</i>	N	Mummichog	<i>Fundulus heteroclitus</i>	N
Fourspine Stickleback	<i>Apletes quadracus</i>	N	Mosquitofish	<i>Gambusia affinis</i>	I
Ninespine Stickleback	<i>Pungitius pungitius N</i>	N	Threespine Stickleback	<i>Gasterosteus aculeatus</i>	N
Striped Bass	<i>Morone saxatilis</i>	N	White Perch	<i>Morone americana</i>	N
Rock Bass	<i>Ambloplites rupestris</i>	I	Mud Sunfish	<i>Acantharchus pomotis</i>	N
Bluespotted Sunfish	<i>Eleacanthus gloriosus</i>	N	Blackbanded Sunfish	<i>Eleacanthus chaetodon</i>	N
Green Sunfish	<i>Lepomis cyanellus</i>	I	Banded Sunfish	<i>Eleacanthus obesus</i>	N
Bluegill	<i>Lepomis macrochirus</i>	I	Pumpkinseed	<i>Lepomis gibbosus</i>	N
Warmouth	<i>Lepomis gulosus</i>	I	Redbreasted Sunfish	<i>Lepomis auritus</i>	N
Largemouth Bass	<i>Micropterus salmoides</i>	I	Smallmouth Bass	<i>Micropterus dolomieu</i>	I
Black Crappie	<i>Pomoxis nigromaculatus</i>	I	White Crappie	<i>Pomoxis alularis</i>	I
Tessellated Darter	<i>Etheostoma olmstedii</i>	N	Swamp Darter	<i>Etheostoma fusiforme</i>	N
Shield Darter	<i>Percina peltata</i>	N	Yellow Perch	<i>Perca flavescens</i>	N
Slimy Sculpin	<i>Cottus cognatus</i>	N	Walleye	<i>Sander vitreus</i>	I
Hogchoker	<i>Trinectes maculatus</i>	N	Oriental Weatherfish	<i>Misgurnus anguillicaudatus</i>	E

HP- Historical Presence E – Exotic N – Native I - Introduced



Invertebrate species or species without backbones also populate the waters of Maplewood Township. Several freshwater mussels are known to occur in Essex County. The most common are the Eastern Elliptio (*Elliptio complanata*) and the Creeper (*Strophitus undulates*). The Eastern Elliptio is considered to be widespread and abundant, while the Creeper is considered to be a species of special concern in New Jersey. The Asiatic Clam is an invasive, exotic species which can be found in most freshwater waterways in New Jersey (Cordeiro and Bowers-Altman 2006). In addition, the State Natural Heritage Program has several freshwater mussels on its list of species that occur in Essex County. The table below lists the freshwater mussels documented for Essex County.

Common Name	Scientific Name	Common Name	Scientific Name
Creeper	<i>Strophitus undulates</i>	Eastern Elliptio	<i>Elliptio complanata</i>
Asiatic clam	<i>Corbicula fulminea</i>	Eastern Lampmussel	<i>Lampsilis radiata</i>
Yellow Lampmussel	<i>Lampsilis carios</i>	Triangle Floater	<i>Alasmidonta undulata</i>
Green Floater	<i>Lasmigona subviridis</i>		

The New Jersey Department of Environmental Protection (NJDEP), Bureau of Freshwater and Biological Monitoring samples benthic macroinvertebrate communities in streams throughout New Jersey. The purpose of the sampling is to determine if the water quality of waterways is impaired, since benthic macroinvertebrates populations provide information about water quality. The families listed in the most recently published results of NJDEP benthic macroinvertebrate sampling the Rahway River and the Elizabeth River are displayed below:

Common Name	Scientific Name	Common Name	Scientific Name
Tube Worms	<i>Tubificidae</i>	Midges	<i>Chironomidae</i>
Aquatic Sowbugs	<i>Asellidae</i>	Bloodred Midges	<i>Bloodred Chironomidae</i>
Earthworms	<i>Lumbriculidae</i>	Common Netspinners	<i>Hydropsychidae</i>
Scuds	<i>Gammaridae</i>	Narrow-winged Damselflies	<i>Coenagrionidae</i>
Water boatmen	<i>Corixidae</i>	Free-living Flatworms	<i>Planariidae</i>
Water fleas	<i>Chydoridae</i>	Potworms	<i>Enchytraeidae</i>
Moth Flies and Sand Flies	<i>Psychodidae</i>	Water Boatmen	<i>Corixidae</i>
Roundworms	<i>Nematoda</i>	Blackflies	<i>Simuliidae</i>
Leeches	<i>Glyssiphoniidae</i>	Mayflies	<i>Baetidae</i>
Leeches	<i>Erpobdellidae</i>	Hydras	<i>Hydridae</i>
Micro-Caddisflies	<i>Hydroptilidae</i>	Dance Flies, Dagger Flies	<i>Empididae</i>



		and Balloon Flies	
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The tube worms are the predominant macroinvertebrate family at the NJDEP sampling site. This a pollution-tolerant family. Its dominance indicates impaired water quality in the Elizabeth and Rahway Rivers (McAfferty 1981).

4.2.2 Terrestrial Animals

Habitat for terrestrial or land animals in Maplewood Township range from the protected forests and wetland forests of the South Mountain Reservation to the most intensively developed urban lands. Species requiring larger home ranges will only be found in the Reservation although the river corridors of the Township's waterways provide connections to habitat patches and can increase the available habitat for some animals. A list of the mammals found in New Jersey are listed below.



Table 12: New Jersey Mammals (NJDEP, DFW 2005b)

Common Name	Scientific Name	St	Common Name	Scientific Name	St
Opossum	<i>Didelphis marsupialis</i>	S	Eastern Cottontail	<i>Sylvilagus floridanus</i>	S
Masked Shrew	<i>Sorex cinereus</i>	S	New England Cottontail	<i>Sylvilagus transitionalis</i>	U
Tuckahoe Masked Shrew	<i>Sorex cinereus nigriculus</i>	U	European Hare	<i>Lepus capensis</i>	I
Water Shrew	<i>Sorex palustris</i>	U	Black-tailed Jackrabbit	<i>Lepus californicus</i>	I
Smokey Shrew	<i>Sorex fumeus</i>	U	White-tailed Jackrabbit	<i>Lepus townsendii</i>	I
Long-tailed Shrew	<i>Sorex dispar</i>	U	Eastern Chipmunk	<i>Tamias striatus</i>	S
Short-tailed Shrew	<i>Blarina brevicauda</i>	S	Woodchuck	<i>Marmota monax</i>	S
Least Shrew	<i>Cryotis parva</i>	U	Gray Squirrel	<i>Sciurus carolinensis</i>	S
Pygmy Shrew	<i>Sorex hoyii</i>	U	Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S
Hairy-tailed Mole	<i>Parascalops breweri</i>	U	Southern Flying Squirrel	<i>Glaucomys volans</i>	U
Eastern Mole	<i>Scalopus aquaticus</i>	S	Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	U
Star-nosed Mole	<i>Condylura cristata</i>	U	Beaver	<i>Castor canadensis</i>	INC
Little Brown Bat	<i>Myotis lucifugus</i>	S	Nutria	<i>Myocastor coypus</i>	I
Indiana Bat	<i>Myotis sodalis</i>	E	Marsh Rice Rat	<i>Oryzomys palustris</i>	S
Keen Myotis	<i>Myotis septentrionalis</i>	U	White-footed Mouse	<i>Peromyscus leucopus</i>	S
Small-footed Myotis	<i>Myotis leibii</i>	U	Eastern Wood Rat	<i>Neotoma floridana</i>	E
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	U	Red-backed Mouse	<i>Clethrionomys gapperi</i>	S
Eastern Pipistrel	<i>Pipistrellus subflavus</i>	U	Meadow Vole	<i>Microtus pennsylvanicus</i>	S
Big Brown Bat	<i>Eptesicus fuscus</i>	S	Pine Vole	<i>Microtus pinetorum</i>	S
Red Bat	<i>Lasiurus borealis</i>	S	Muskrat	<i>Ondatra zibethicus</i>	S
Northern yellow bat	<i>Lasiurus intermedius</i>	P	Southern Bog Lemming	<i>Synaptomys cooperi</i>	U
Hoary Bat	<i>Lasiurus cinereus</i>	U	Black Rat	<i>Rattus rattus</i>	I
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	U	Brown Rat	<i>Rattus norvegicus</i>	I
Porcupine	<i>Erethizon dorsatum</i>	INC	House mouse	<i>Mus musculus</i>	I
Eastern Coyote	<i>Canis latrans, var</i>	INC	Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	U
Red Fox	<i>Vulpes vulpes</i>	S	Gray Fox	<i>Urocyon cinereoargenteus</i>	S
Black Bear	<i>Ursus americanus</i>	INC	Raccoon	<i>Procyon lotor</i>	S
Ermine	<i>Mustela erminea</i>	U	Striped Skunk	<i>Mephitis mephitis</i>	S
Long-tailed Weasel	<i>Mustela frenata</i>	S	Bobcat	<i>Felis rufus</i>	E
Mink	<i>Mustela vison</i>	S	White-tailed Deer	<i>Odocoileus virginianus</i>	D
River Otter	<i>Lutra canadensis</i>	S			

St – Status E - Endangered D - Decreasing INC - Increasing S - Stable U – Undetermined I - Introduced P - Peripheral

Although New Jersey is a small state, a large number of birds have been observed. Some merely pass through during migrations to other places. Others nest in New Jersey and spend their winters elsewhere. Many are permanent residents. The table below contains the birds found in New Jersey without the numerous shorebirds and duck species that can be found in areas along the coast. Only the most urban-tolerant of these species were included, such as the Mallard and various Gull species. The NJDEP's Division of Fish and Wildlife web site can be accessed for a comprehensive list of New Jersey birds. The birds are so numerous that the scientific names were not included. These can also be found at the Division of Fish and Wildlife web site.



Table 13: Birds of New Jersey (NJDEP, DFW 2001 NJDEP, DFW 2005)

Common Name	St	Common Name	St	Common Name	St	Common Name	St
Great Blue Heron	SC	Snow Goose	INC	Northern Bobwhite	RP	Common Barn Owl	SC
Great Egret	RP	Canada Goose	INC	Rock Dove	I	Eastern Screech Owl	RP
Snowy Egret	RP	Mallard	INC	Mourning Dove	S	Great Horned Owl	S
Little Blue Heron	RP	Black Vulture	INC	Black-billed Cuckoo	RP	Snowy Owl	U
tricolored Heron	RP	Turkey Vulture	INC	Yellow-billed Cuckoo	RP	Barred Owl	T
Cattle Egret	RP	Northern Harrier	E	Short-eared Owl	T	Long-eared Owl	E
Green Heron	RP	Sharp-shinned Hawk	SC	Common Nighthawk	SC	Northern Saw-whet Owl	S
Black-crowned Night Heron	T	Cooper's Hawk	T	Chuck-will's-widow	RP	Whip-poor-will	RP
Yellow-crowned Night Heron	T	Northern Goshawk	E	Ruby-throated Hummingbird	D	Chimney Swift	RP
RP Tundra Swan	INC	Red-shouldered Hawk	E	Red-headed Woodpecker	T	Yellow-bellied Sapsucker	U
Mute Swan	I	Broad-winged hawk	SC	Red-bellied Woodpecker	INC	Downy Woodpecker	S
Laughing Gull	S	Red-tailed Hawk	INC	Hairy Woodpecker	D	Northern Flicker	RP
Little Gull	U	Rough-legged Hawk	D	Pileated Woodpecker	D	Olive-sided Flycatcher	U
Common Black-headed Gull	D	American Kestrel	SC	Eastern Wood Pewee	RP	Yellow-bellied Flycatcher	U
Bonaparte's Gull	D	Merlin	INC	Acadian Flycatcher	RP	Alder Flycatcher	INC
Ring-billed Gull	INC	Peregrine Falcon	E	Willow Flycatcher	RP	Least Flycatcher	SC
Herring Gull	S	Horned Lark	SC	Eastern Phoebe	S	Great Crested Flycatcher	RP
Iceland Gull	D	Purple Martin	S	Western Kingbird	U	Eastern Kingbird	RP
Lesser Black-backed Gull	INC	Tree Swallow	INC	No. Rough-winged Swallow	S	Barn Swallow	S
Glaucous Gull	D	Bank Swallow	S	Cliff Swallow	SC	American Crow	S
Great Black-backed Gull	D	Blue Jay	D	Ruby-crowned Kinglet	D	Fish Crow	S
Belted Kingfisher	S	Golden-crowned Kinglet	INC	Blue-gray Gnatcatcher	S	Common Raven	INC
Black-capped Chickadee	S	Tufted Titmouse	INC	Brown Creeper	INC	Winter Wren	SC
Carolina Chickadee	S	Red-breasted Nuthatch	S	Carolina Wren	INC	Sedge Wren	E
Boreal Chickadee	U	White-breasted Nuthatch	INC	House Wren	S	Marsh Wren	RP
Eastern Bluebird	INC	Veery	SC	Swainson's Thrush	S	Wood Thrush	RP
American Robin	S	Gray Catbird	RP	Gray-cheeked Thrush	SC	Water Pipit	U
Northern Mockingbird	D	Brown Thrasher	RP	Hermit Thrush	D	Cedar Waxwing	S
Northern Shrike	S	Loggerhead Shrike	E	European Starling	I	White-eyed Vireo	D
Blue-winged Warbler	RP	Yellow Warbler	S	Evening Grosbeak	D	Blue-headed Vireo	SC
Golden-winged Warbler	SC	Chestnut-sided Warbler	S	House Sparrow	I	Yellow-throated Vireo	RP
Tennessee Warbler	D	Magnolia Warbler	INC	American Goldfinch	INC	Warbling Vireo	S
Orange-crowned Warbler	S	Cape May Warbler	S	Pine Siskin	S	Philadelphia Vireo	S
Northern Parula	SC	Black-throated Blue Warbler	RP	Yellow-throated Warbler	RP	Red-eyed Vireo	S
Nashville Warbler	S	Black-throated Green Warbler	SC	Pine Warbler	RP	Palm Warbler	INC
Yellow-rumped Warbler	INC	Blackburnian Warbler	RP	Prairie Warbler	RP	Bay-breasted Warbler	S
Blackpoll Warbler	D	Cerulean Warbler	SC	Black-and-white Warbler	RP	American Redstart	INC
Worm-eating Warbler	RP	Ovenbird	D	Louisiana Waterthrush	RP	Connecticut Warbler	D
Prothonotary Warbler	RP	Northern Waterthrush	S	Kentucky Warbler	SC	Mourning Warbler	INC
Common Yellowthroat	D	Hooded Warbler	RP	Wilson's Warbler	S	Canada Warbler	SC
Yellow-breasted Chat	SC	Summer Tanager	RP	Scarlet Tanager	RP	Northern Cardinal	INC
Rose-breasted Grosbeak	RP	Blue Grosbeak	INC	Indigo Bunting	RP	Dickcissel	RP
Eastern Towhee	RP	American Tree Sparrow	U	Chipping Sparrow	S	Field Sparrow	RP
Vesper Sparrow	E	Lark Sparrow	S	Savannah Sparrow	T	Grasshopper Sparrow	T
Henslow's Sparrow	E	Fox Sparrow	INC	Lincoln's Sparrow	INC	Swamp Sparrow	D
Nelson's Sharp-tailed Sparrow	RP	Song Sparrow	D	White-throated Sparrow	D	White-crowned Sparrow	D



Dark-eyed Junco	: S	Lapland Longspur	: U	Snow Bunting	: U	Boat-tailed Grackle	: INC
Table 13. Birds of New Jersey (continued)							
Red-winged Blackbird	: S	Eastern Meadowlark	: SC	Rusty Blackbird	: INC	Purple Finch	: RP
Bobolink	: T	Brown-headed Cowbird	: S	Common Grackle	: D	House Finch	: S
Orchard Oriole	: S	Baltimore Oriole	: RP	Pine Grosbeak	: U	Common Redpoll	: U
Red Crossbill	: INC	White-winged Crossbill	: INC				
E – Endangered T – Threatened SC - Special Concern D – Decreasing INC – Increasing RP - Regional Priority S – Stable U – Undertermined I – Introduced P – Peripheral							

The wide variety of habitat types should allow for some diversity in the reptile community of the Township. The NJDEP Division of Fish and Wildlife provides a reptile checklist for the State. Information is also available that can be used to narrow the list to those occurring within Essex County. The reptiles that can be found in Essex County are listed in the table below.

Table 14: Essex County Reptiles (NJDEP, DFW 2001 NJDEP, DFW 2005)					
Common Name	Scientific Name	St	Common Name	Scientific Name	St
Common Snapping Turtle	<i>Chelydra serpentine</i>	S	Common Musk Turtle	<i>Sternotherus odoratus</i>	S
Eastern Mud Turtle	<i>Kinosternon s. subrubrum</i>	U	Spotted Turtle	<i>Clemmys guttata</i>	SC
Bog Turtle	<i>Clemmys muhlenbergii</i>	E	Wood Turtle	<i>Clemmys insculcata</i>	T
Red-eared Slider	<i>Malaclemys t. terrapin</i>	U	Eastern Painted Turtle	<i>Chrysemys p. picta</i>	U
Eastern Box Turtle	<i>Terrapene c. carolina</i>	SC	Northern Brown (DeKay's) Snake	<i>Storeria d. dekayi</i>	S
Northern Water Snake	<i>Nerodia s. sipedon</i>	S	Eastern Garter Snake	<i>Thamnophis s. sirtalis</i>	S
Northern Redbelly Snake	<i>Storeria o. occipitamaculata</i>	S	Eastern Smooth Earth Snake	<i>Virginia v. valeriae</i>	U
Eastern Ribbon Snake	<i>Thamnophis sauritis sauritis</i>	S	Northern Ringneck Snake	<i>Diadophis punctatus edwardsi</i>	S
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>	D	Northern Black Racer	<i>Coluber constrictor constrictor</i>	U
Eastern Worm Snake	<i>Carphophis amoenus amoenus</i>	U	Black Rat Snake	<i>Elaphe o. obsoleta</i>	U
Smooth Green Snake	<i>Ophedrys vernalis</i>	U	Northern Copperhead	<i>Agkistrodon conotortix mokasen</i>	SC
Eastern Milk Snake	<i>Lampropeltis t. triangulum</i>	S	Five-lined Skink	<i>Eumeces fasciatus</i>	U
St – Status E – Endangered T – Threatened D – Decreasing SC - Special Concern U - Undertermined S - Stable I - Introduced					

Maplewood Township possesses a variety of wetland and aquatic habitats. These moister habitats are required by most amphibians at some life stage. The potential exists for many amphibians to be present, where water quality is adequate. The table below lists the amphibians known to occur in Essex County.



Common Name	Scientific Name	St	Common Name	Scientific Name	St
Marbled Salamander	<i>Ambystoma opacum</i>	SC	Spotted Salamander	<i>Ambystoma maculatum</i>	D
Blue-spotted Salamander	<i>Ambystoma laterale</i>	E	Slimy Salamander	<i>Plethodon g. glutinosus</i>	S
Red-spotted Newt	<i>Notophthalmus v. viridescens</i>	D	Four-toed Salamander	<i>Hemidactylum scutatum</i>	D
Northern Dusky Salamander	<i>Desmognathus f. fuscus</i>	S	Northern Red Salamander	<i>Pseudotriton r. ruber</i>	D
Red-backed Salamander	<i>Plethodon c. cinereus</i>	S	Long-tailed Salamander	<i>Eurycea l. longicauda</i>	T
Northern Spring Salamander	<i>Gyrinophilus p. porphyriticus</i>	SC	American Toad	<i>Bufo americanus</i>	S
Northern Two-lined Salamander	<i>Eurycea b. bislineata</i>	S	Northern Cricket Frog	<i>Acris c. crepitans</i>	U
Eastern Spadefoot Toad	<i>Scaphiopus h. holbrookii</i>	D	New Jersey Chorus Frog	<i>Pseudacris triseriata kalmi</i>	S
Fowler's Toad	<i>Bufo woodhousii fowleri</i>	SC	Bullfrog	<i>Rana catesbeiana</i>	S
Northern Spring Peeper	<i>Hyla c. crucifer</i>	S	Wood Frog	<i>Rana sylvatica</i>	S
Northern Gray Treefrog	<i>Hyla versicolor</i>	S	Pickerel Frog	<i>Rana palustris</i>	S
Upland Chorus Frog	<i>Pseudacris triseriata feriarum</i>	U	Southern Leopard Frog	<i>Rana spenocephala</i>	S
Green Frog	<i>Rana clamitans melanota</i>	S			

St – Status E – Endangered T – Threatened D – Decreasing SC – Special Concern U – Undertermined S – Stable I – Introduced

4.2.3 Rare Species and Species of Special Concern

A review of available information concerning the presence or absence of threatened and endangered species and critical wildlife habitat was performed for the subject property. Our review included a search of State and Federal maps and databases to determine if records exist for occurrences of threatened and endangered wildlife species, rare plants or natural communities, or critical wildlife habitat on or in the immediate vicinity of the project site. Specifically, searches of the New Jersey Department of Environmental Protection Natural Heritage Program Database and the United States Fish and Wildlife Service Database were performed and the New Jersey Landscape Mapping Project was reviewed.

Common Name	Scientific Name	St	Common Name	Scientific Name	St
Cooper's Hawk	<i>Accipiter cooperii</i>	T/T	Grasshopper Sparrow	<i>Ammodramus savannarum</i>	T/S
Blue-Spotted Salamander	<i>Ambystoma laterale</i>	E	Long-Eared Owl	<i>Asio otus</i>	T/T
Red-Shouldered Hawk	<i>Buteo lineatus</i>	E/T	Upland Sandpiper	<i>Bartramia longicauda</i>	E
Sedge Wren	<i>Cistothorus platensis</i>	E	Peregrine Falcon	<i>Falco peregrinus</i>	E
Wood Turtle	<i>Clemmys insculpata</i>	T	Bobcat	<i>Lynx rufus</i>	E
Bobolink	<i>Dolichonyx oryzivorus</i>	T/T	Red-Headed Woodpecker	<i>Melanerpes erythrocephalus</i>	T/T
Least Tern	<i>Sterna antillarum</i>	E	Savannah Sparrow	<i>Passerculus sandwichensis</i>	T/T
Barred Owl	<i>Strix varia</i>	T/T			

E – Endangered T – Threatened S – Stable
E/T, T/T, T/S – Dual Status, letter before the slash is status of breeding population, letter after the slash is for the migratory population



Of the rare terrestrial invertebrates that have been observed in Essex County, only the American Burying Beetle is officially listed as endangered.

Common Name	Scientific Name	Common Name	Scientific Name
Harris' Checkerspot	<i>Chlosyne harrisii</i>	Giant Swallowtail	<i>Papilio Cresphontes</i>
Silvery Checkerspot	<i>Chlosyne nycteis</i>	Gray Comma	<i>Polygonia progne</i>
Northern Pearly Eye	<i>Enodia anhedon</i>	Checkered White	<i>Pontia protodice</i>
American Burying Beetle	<i>Nicrophorus americanus</i>	Mottled Dusky Wing	<i>Erynnis martialis</i>

The NJDEP provides critical habitat mapping in its Landscape Project mapping. Figure 8 shows the critical habitat mapping for Maplewood Township. The majority of the South Mountain Reservation is mapped as critical forest habitat with linear patches of forested wetland habitat. The threatened wood turtle has been documented to occur in this portion of the Township or in connected habitat in adjacent municipalities. Additional forested wetlands patches are present in Maplecrest Park and on a nearby parcel that contains a multi-family residential development.

The wildlife of Maplewood Township has not been specifically characterized to date. Given the diversity of plant communities and therefore, wildlife habitat and the large number of species on State and regional wildlife checklists, many wildlife species may occur in Maplewood. It is known that the threatened Wood turtle is present in the South Mountain Reservation. Several threatened and endangered species are documented to occur in Essex County. Field surveys could reveal the presence of more threatened and endangered species and the presence of additional habitat. Development of areas containing natural vegetation communities should consider potential impacts to wildlife and wildlife habitat.



5.0 Cultural and Community Resources

5.1 Archaeological Resources

The Watchung Mountains were named by the Lenni-Lenape. They called the area that lies between the First and Second Watchung Mountains as the Wach Unks, which means “high hills” (Johnson undated). The name Watchung was derived from these words. However, evidence of the Lenni-Lenape’s presence remains to be uncovered, due to the paucity of archaeological research in the Town (PPSA 2004).

5.2 Historic Resources

The following brief history of Maplewood Township has been excerpted from the Township’s Master Plan document, adopted on March 9, 2004. It begins in the 1700s, after the land was acquired from the Lenni-Lenape.

“Over the next century (18th), one of the small outlying settlements developed into what is now the western half of Maplewood. By the end of the 18th century this small settlement became known as Jefferson Village—named for Thomas Jefferson. During this early period, the settlers built their houses close to the roads and paths that connected the settlements of Newark, Orange, Connecticut Farms (now Union), Springfield and Morristown. Several of Maplewood’s earliest buildings survive on the town’s first principal roads: Elmwood, Boyden, and Parker Avenues, Valley Street, and Ridgewood and Tuscan Roads.

During the Revolutionary war, many local men served in the Continental army and/or the militia and a number saw action at the Battle of Springfield, which took place nearby. Throughout the decades following the war, Jefferson Village remained a sleepy settlement with approximately thirty families, but no center of commerce. The same could be said for the valley and hills to the east that would become the eastern part of Maplewood. Just a few decades later however, the effects of the Industrial Revolution were beginning to be felt in the community.



In 1831, Lewis Pierson constructed a gristmill in the valley along the East Branch of the Rahway River. Pierson attained such prominence that in 1843 he was able to build Vaux Hall—a temple-front house in the Greek Revival style. Both the mill and Vaux Hall survive and have been determined eligible for listing in the National Register of Historic Places. By 1837 a paper mill (no longer extant) was located along the Rahway River on Dunnell Road—the site of the present Fire Department headquarters. During this same period, the Crowell family established and ran three key businesses along Valley Street: a cider mill, the area's first general store (built in 1841 and called the Clinton Valley Store) and a "shoe manufactory" that operated out of the store's second floor.

The coming of the railroad was a turning point for the township, eventually leading to the gradual conversion of the area into a residential community. In 1838, the Morris and Essex Railway was constructed and passed through the center of what would become Maplewood Village. In 1860 Maplewood Station was constructed at the foot of Lenox Place near the intersection of Baker Street on Dunnell Road. This station and its train line are listed as part of a thematic nomination in the more National Register of Historic Places. Initially, the coal-fired trains allowed city dwellers access to the rural landscape of the First Mountain. Wealthy families, exemplified by Cornelius Roosevelt, the uncle of future president Theodore Roosevelt, constructed large homes which served as country retreats. The area now known as Roosevelt Park was developed in 1905 from the Roosevelt's "Hickories" estate and Maplewood Avenue.

In 1902, the tracks were elevated and the present station was constructed. The Hilton section, originally called "North Farms" or "Middleville," was developed after the opening of the Newark-Springfield Turnpike (now Springfield Avenue) in 1806. The Hilton section became a flourishing village in its own right in the 1800s and served as a stagecoach stop between Morristown and Newark. There were several hotels and many small shops were established for manufacturing nails, barrel hoops, shoes and men's clothing to meet the needs of the villagers and to trade in the Newark and New York markets. Well-known inventor Seth Boyden retired from Newark to this area in the 1860s. His home on Boyden Avenue, where he hybridized the large "Hilton Strawberry," still exists adjacent to Seth Boyden School.



During the nineteenth and early twentieth centuries, the Township of Maplewood had many changes in name and boundaries. Maplewood retained its rural quality through the early 1900s—there were many farms and woods and only a few main streets. But change was beginning to occur as a few entrepreneurs realized the town's potential as an attractive suburb along the train line. By the mid-1920s, Maplewood was experiencing dramatic, community-wide growth. Local building codes decreed that no neighboring houses should be identical to each other. Therefore, developers working in large areas of town built houses in a wide variety of popular styles, including numerous revival styles, such as Classical, Spanish, and Tudor, as well as bungalows and "colonials." These homes, primarily constructed during the 1920s and 30s, make up the majority of buildings within the township today. As neighborhoods grew, local schools were built to accommodate the growing numbers of children. Three of the four elementary schools, and the high school, were also constructed during the 1920s and display the same Tudor and classical revival styling as seen on many houses.

Shortly after the incorporation of the Township of Maplewood in 1922, the Olmstead Brothers firm was hired to create a plan for a park in the center of town. The plan for Memorial Park included naturalized plantings with open spaces and designated play areas, an amphitheater and a small lake. Maplewood's government buildings, sited around Memorial Park, which continue in their original functions, display a solid, classically oriented design, and are integral to the cohesive, civic beauty of the township.

While most of Maplewood consists of single-family homes, several other institutions contribute to the life of the local residents. In 1927, the Marcus L. Ward Homestead was constructed as a free residence for elderly bachelors and widowers on a large tract in the Hilton area. Prominent architect John Russell Pope designed this impressive structure. In 1966, Maplewood acquired land from the Ward Homestead and constructed the award-winning Olympic size community swimming pool. The Maplewood Free Public library existed in various locations within the Township until the construction of the current Main library building, adjacent to Memorial Park, on Baker Street in 1956. The Hilton Branch of the library, located on Springfield Avenue, was built in 1959. Little building occurred in the years following. Exceptions are the 1970 South Mountain YMCA building and the 1984 Maplewood Community Center in DeHart Park.



“Adaptive re-use” has become a trend of recent decades as historic buildings are renovated to accommodate new uses, such as the Burgdorf Cultural Center, formerly a church, and the 1978 Building, now an art gallery. In 1978, the historic Durand-Hedden House was purchased with the assistance of State Green Acres funds. Its 2.0 acre grounds were set aside as a passive park, known as “Grasmere Park” (PPSA 2004).

5.2.1 Cultural Resource Inventory

The Township of Maplewood is gradually undertaking the compilation of a Cultural Resource Inventory. The following list of properties constructed prior to 1860 is the beginning of this effort (PPSA 2004).

Date	Address	Building Name
c. 1840	592 Valley	Hezekiah Dare House
c. 1730	634 Valley	Moses Hand House
	647 Valley	
	649 Valley	
1843	693 Valley	Vaux Hall
1831	697 Valley	Pierson's Mill
1831	18 Tuscan	Brick School House
1818	20 Tuscan	Red House
1820	27 Tuscan	
c. 1750	88 Tuscan	Jonas Ball House
	91 Tuscan	Wm. Courter Homestead
c. 1750	35 Parker	Widow Tichenor's House
	49 Parker	
1840	64 Parker	
1805	81 Parker	Aaron Brown Homestead
c. 1755	103 Parker	Smith-Taylor House
1848	172 Parker	Philander Ball House
c. 1700	250 Elmwood	Ezekiel Ball House
c. 1840	304 Elmwood	Fleming Manor
	54 Maple	
	2122 Millburn	
1841?	1 Park Road	Henry Smith House
	30 Dunnell	
1855	302 Boyden	Seth Boyden House
	321 Boyden	
	449 Boyden	
	6 Van Ness	Peter/Caleb Van Ness House
	10 45 th Street	Arcularius Barn
	1597 Springfield	



1774	22 Jefferson	Old Stone House
	29 Jefferson	
c. 1765	57 Jefferson	Neighbor Jos. Gildersleeve House
	91 Jefferson	David Terrell/Chas. Ball House
Table 18: Maplewood Structures Built Before 1862 (PPSA 2004)		
Date	Address	Building Name
1743	425 Ridgewood	Timothy Ball House
	452 Ridgewood	
c. 1800	455 Ridgewood	Noah Littell House
1767	491 Ridgewood	Caleb Durand House
c. 1784	509 Ridgewood	
1787	523 Ridgewood	Durand-Hedden House
c. 1776	589 Ridgewood	Isaac Smith House
c. 1776	590 Ridgewood	Necessity Center
1840	629 Ridgewood	
	645 Ridgewood	David Headley House
	653 Ridgewood	Chief Aaron Baker House
c. 1785	658 Ridgewood	Gardner-Stone House
	3 Cedar Lane	
	30 Washington Park	

The Maplewood Historic Preservation Commission has obtained historical designations for several properties in the Township. These are listed below:

- Aaron Brown House
81 Parker Avenue
Block 25.03, Lot 109
Landmark # D-001-05
Public Hearing: July 11, 2005
Ordinance: November, 2005

The Aaron Brown House was constructed by Aaron Brown and Dorcas Ball Brown in 1805, although some believe that the house was an addition to a smaller house dating back to c. 1789. Families such as the Balls owned large tracts of land, which were settled by extended family members. The house was situated within a rural settlement, referred to by residents at South Orange Village. The house was established as a historic landmark by Maplewood Township in 2005. The house is important historically, since it represents the distinctive architectural characteristics of a typical farmhouse established early in the history of Maplewood and was the residence of member of the historically prominent Ball family. Archaeological investigations of the property may yield artifacts important to understanding the early history of Maplewood Township (Nelson & Kurshan 2005).



- Timothy Ball House
425 Ridgewood Road
Block 7-4, Block 194
Landmark # D-002-05
Public Hearing: July 7, 2005
Ordinance: November, 2005

The Timothy Ball House was constructed in 1743. Since the physical characteristics are traditional in nature and local materials and styles were utilized, the house is considered to be a vernacular structure. Architecturally the house can be classified as a "Deep East Jersey Cottage," a housing type preferred by New England settlers with some Dutch influences. The house has been used as a dining establishment throughout its history in the 20th century under the following names: "Ye Olde Washington Inn" "Timothy Ball House Restaurant" and "Washington Inn"

The Timothy Ball House was constructed during Maplewood's early settlement period, when settlers pushed out from Newark to the ridge of "the first mountain." Timothy Ball's grandfather, Edward Ball, was originally from Connecticut. He migrated to what is now Newark in 1666 with Robert Treat. Timothy Ball was an important historical figure, as a signer of the "Fundamental Agreement," which formed a common township at New-Ark on Pesayack." During the Revolutionary War, Timothy Ball's sons participated in the New Jersey Militia.

Although not documented, locally, it is believed that George Washington was quartered in the Timothy Ball House during the period of the "Battle of Springfield" in June of 1780. Supporting this story is the proximity of the house to area of this battle, and that of the skirmish at the Vaux Hall Bridge (Littel's Bridge). The potential for the presence of historical archaeological resources is high at this site (Southwick & Chrisman 2005)

- Grasmere Park, including Durand-Hedden House and all structures on lot
521. 523, 525 Ridgewood Road
Block 8-5, Lot 238
Landmark # D-003-06
Public Hearing: February 13, 2006



Ordinance: March, 2006

Grasmere Park consists of 1.7 acres of land containing the Durand-Hedden House, two related houses, a multi-purpose building, a meadow, a Colonial style herb garden and a children's garden. Structures present on the property include the Durand-Hedden House, two related houses, and a multi-purpose building. A small, intermittent stream runs west to east through the property. The house was constructed in 1718. Architecturally, the Durand-Hedden house was originally constructed as a post and beam farmhouse with later improvements in the Greek Revival and the Gothic Revival styles. The original owners of the Durand-Hedden house (Obadiah Durand and Edward Hedden and their wives) were among the initial pioneers to settle the mountainside of Maplewood Township.

In addition to being one of the first settlers to reach this area from the Newark Colony, Edward Hedden's descendants fought in the Revolutionary War and were among the earliest members of the community of Jefferson Village. In recent years, some archeological exploration has been carried out and artifacts have been uncovered relating to life during the earlier periods of habitation on this land. Further research is likely to yield more information (Newberry & Kurshan 2006).

- Jonas Ball House
88 Tuscan Road
Block 28.6, Lot 41
Landmark #D-004-06
Public Hearing: February 13, 2006
Ordinance: March, 2006

In 1750, Jonas Ball acquired 18 acres on the south side of Tuscan Road and built a stone structure now known as 88 Tuscan Road or the Spring House. Members of the Ball family fought in the Revolutionary War and participated in the Battle of Springfield. The house's association with a prominent local family adds to the significance of the house. The original one-story stucco portion of the dwelling, which comprises the north half of the Jonas Ball House indicates the early function of the structure as a springhouse. Prior to this the original structure was utilized as a cooperage. During another period the building was a milkshed. Late improvements included Queen Anne or Craftsman Style embellishments. The changes in the use of the house reflect social and cultural context of the community throughout its history. The long and varied history of usage of the Jonas Ball House provide for a great likelihood of the presence of historical



archaeological resources. Some examples have already been uncovered including a plumb bob, a plaque dated 1899 and a tin box dated 1931 (Hammarberg & Blinder 2006).

- Vaux Hall
693 Valley Street
Block 18.3, Lot 120
Landmark # D-005-06
Public Hearing: February 13, 2006
Ordinance: March, 2006

Vaux Hall is a two-story Greek Revival style wood frame structure constructed in 1843. Vaux Hall was constructed by Lewis Pierson between 1801 and 1889. The Maplewood Country Club golf course, which lies to the north and west of the property, was once part of the Pierson's land. Vaux Hall was owned and occupied by the Pierson family from the time of its construction in 1843 until 2000. The family was prominent as the owners of the local mill. The preservation of the house is important since it may be the only temple-front "high style" Greek Revival House remaining in Essex County.

Archaeological deposits associated with the an earlier Pierson house, as well as Vaux Hall, are likely to yield important historical information on early settlement, the agrarian era, and milling in Essex County. Because the house remained in the same family for such a long period, the site is likely to yield important information about life and the economy in this region, from the early settlement period through the 20th century (Chrisman & Cockman 2005)

Currently protected historic sites are mapped on Figure 9. It is anticipated that the number of preserved site will increase as the Township works toward formalizing the recognition of its rich historical heritage.

5.3 Public Lands/Open Space/Parks and Recreational Areas

Outside of the South Mountain Reservation, the Township of Maplewood consists predominantly of developed private lands. The South Mountain Reservation provides a means for contact with nature. Public lands that provide for more active recreational activities are in shorter supply. Many of the parks used most



intensively by residents suffer from overuse. While the National Park and Recreation Association recommend 10 acres of park land for every 1,000 residents or one acre per 100 residents, Maplewood possesses approximately one acre for every 370 residents, excluding the South Mountain Reservation (PPSA 2004). Open space parcels are mapped on Figure 1. The Township's current parklands are listed below.

South Mountain Reservation consists of 2,047 acres of land on South Orange Avenue. Facilities include 19 miles of trails, 10 picnic areas, 27 miles of carriage roads, South Mountain Arena and Turtle Back zoo. The Reservation not only provides opportunities for contact with nature and scenic resources; it is also culturally important. Renowned landscape architect, Frederick Law Olmsted visited the Reservation just after it was acquired by Essex County. His stepson and the other Olmsted brothers completed the design for the park. The Civilian Conservation Corps performed much of the construction work in the 1930s.

Memorial Park consists of 24.4 acres on Valley Street. Facilities include 3 tennis courts with lights, 2 basketball courts, a playground, 1 handball field, 2 softball fields and 3 small fields for T-ball. The main branch of the library is located within the park which also contains an amphitheater for summer concerts

Maplecrest Park, with 14.5 acres, is located on Oakland Road and includes 3 tennis courts, 3 small baseball / softball fields, a volleyball court, a playground and shelter with restrooms.

DeHart Recreation Center contains 7.1 acres on Burnett Avenue. The facilities include 2 lit 90' x 60' fields, 1 softball field, 1 lit tennis court, a playground, a hockey rink and a walking / jogging path with a par course. An 8,200 square foot neighborhood center building includes meeting and craft rooms, administrative offices and restroom facilities.

Milo S. Borden Playground is located on Parker Avenue and encompasses 3.6 acres. Facilities include 1 tennis courts, 1 60' athletic field, a playground, a shelter with restrooms and jogging/ walking path.

William J. Orchard Playground contains 2.0 acres with a playground, 2 tennis courts and a basketball half-court.

Grasmere Park, on Ridgewood Road, is the location of the historic Durand-Hedden House. In addition to the historic structures, the park provides passive recreation in the form of walking paths, a meadow and a variety of gardens.

Richard Walter Park is located at the corner of Valley Street and Oakland Road and contains 1 acre of land which contains 2 tennis courts, two aluminum paddle tennis courts, a bocce court and a small play area.

Maplewood Community Pool, located on Boyden Avenue, contains four separate pools of varying dimensions.



Old Water Lands or Chyzowych Field was leased by Maplewood/South Orange Board of Education and is used for school but parking and soccer.

Burgdorf Cultural Center, on Durand Road is used by the Strollers, NJ's oldest community theatre group.

Maplewood Arts Center (Cater House), located on Springfield Avenue, is one large meeting room used for art shows and classes.

Maplewood Country Club is a privately owned facility which offers a 90 acres golf course and pool.

The Board of Education manages 9 properties. Churches and non profits organizations hold deeds to 28 parcels and the tax assessor lists 23 parcels of vacant land (PPSA 2004).

5.4 Aesthetic Resources

Both the natural and the built environment are components of the aesthetic resources available in Maplewood Township. Tree-lined streets with intact historical buildings, with their varied architectural styles together with historic gardens and trees, provide a human historical context. These cultural resources together with natural lands, particularly the South Mountain Reservation, distinguish Maplewood from other communities. These resources are valuable in their own right, but also have value because they are beautiful and provide a unique sense of place.

6.0 Summary and Importance of Resources

This Environmental Resource Inventory has established that Maplewood Township possesses a rich heritage of natural and cultural resources. In many areas the built environment dominates the natural environment. Even here, the multitude of historically important properties are valuable for their historic and aesthetic value. Intense development dominates the municipality, however, South Mountain Reservation, the waterways and floodplains of the Township provide much variation in terms of geology, hydrology and landforms. Vegetation communities and wildlife habitat have been painted in this inventory with broad brush strokes and generally derived from aerial photographs. Particular plant and animal species' checklists are



presented from State and regional sources. Ideally, residents of Maplewood will begin to catalogue the plants and animals currently present in the Township. A few historic or exceptional trees and one historic garden have been identified. Others may be present. Unless they are identified, they cannot be protected.

In some cases, this inventory has identified degraded resources. Parks are overused and additional passive recreational open space is needed. The rivers and streams of Maplewood Township are degraded in terms of water quality and need attention. Utilizing a watershed consciousness, community education and the commitment of financial resources, water quality can be improved if it is established as an important goal. Regional partnerships may be required, since watersheds do not respect municipal boundaries.

It is anticipated that this inventory, like the Township's Master Plan, will become a living document subject to expansion. Greater awareness of the richness of the natural and historical heritage of Maplewood should motivate citizens to seek out unidentified resources for protection and restore degraded ones. Knowledge of resources leads to planning for protection and enhancement. Zoning and land use ordinances can be amended in this context. The future development and redevelopment of Maplewood Township can be appropriately sited and designed to preserve and enhance the sense of place, so important to the success and cohesiveness of any community.



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