

### 3.15 Erodible Soils

Erosion is defined as the natural process by which wind, moving water, ice, and gravitational forces displace the solid and particulate materials of the land. Erosion of exposed bedrock occurs on an extended geological time scale. Soil erodibility occurs on a much shorter time scale and with many more associated acute and chronic consequences. The determination of soil erodibility is a complex process that requires the consideration of soil type, texture and topography. Clay and clayey soils are generally compacted, and do not degrade rapidly under duress of erosional factors. Loam soils consist of 7 to 27 % clay particles, 28 to 50% silt particles, and less than 52% sand particles in order of increasing grain sizes. Loamy soils are not as consistent due to the presence of larger particulate sand and silt. In addition to texture and type, erodibility is influenced by slope and vegetative cover, stormwater runoff velocities, and precipitation. Anthropogenic factors also influence erosion rates, chief among these being agriculture, construction and development, which can exacerbate erosional problems. Erosional problems include declines in agricultural productivity, channelized flow, streambank instability, waterway sedimentation buildup, and contaminant transport.

The model with the greatest acceptance and use to predict soil erodibility is the Universal Soil Loss Equation (USLE). The NRCS has utilized the USLE, but modified it slightly to account for local conditions. USLE utilizes six different variables encompassing the influences discussed above to predict erodibility including: Rainfall and Runoff Erosivity Factor, Soil Erodibility Factor, Slope Length Factor, Slope Steepness Factor, Cover Management Factor, and Erosion Control Factor.

The corresponding [Figure 15](#) depicts the results of the NRCS Erodible Soils displayed in three potential categories: Highly Erodible Land (HEL), Potentially Highly Erodible (PHE), Not Highly Erodible (NHE) and Unclassified or Not Available (NA) ([Figure 15](#)). In general, the soils of the Borough are susceptible to erosion (Table 12), with highly erodible soils covering 41% of the Borough and potentially highly erodible soils covering 29% of the Borough. Erosion can be minimized even on the highly erodible soils by maintaining vegetative cover. When areas with highly erodible or potentially highly erodible soils are proposed for development, additional erosion control measures should be required of the developer and more frequent inspections be conducted of the installed erosion control provisions. Additionally, where slopes are greater than 15%, mandatory adherence to the Borough's Steep Slope Ordinance will reduce the potential for erosion. Waterways can be protected from soil erosion impacts by restricting the disturbance of the riparian areas bordering streams and lakes.

<b>Erodible Soils</b>	<b>Acreage</b>	<b>Percentage</b>
Unclassified	533.92	8%
Not highly erodible land	1345.97	21%
Potentially highly erodible land	1808.89	29%
Highly erodible land	2615.31	41%

### 3.16 Prime Agricultural Soils / Soils of Statewide Importance

Farmland preservation actions often target productive agricultural lands. The Highlands Protection Act and Regional Master Plan also highlight the value of agricultural lands and promote farmland preservation and the practice of agriculture. However, the majority the Borough is developed (67%), and only 20 acres (0.33%) remain as viable agricultural lands.

The federal Farmland Protection Policy Act directs the State Conservationist under the Natural Resources Conservation Service (NRCS) to prepare a statewide list of soil mapping units that fit defined criteria as Prime Farmland Soils and Important Soils (Prime and Unique Farmlands (7 CFR Part 657)). The identification system in New Jersey relies on previously published Land Capability Classification (LCC) data, which identify the suitability of soils for most kinds of field crops. The principal concerns in managing the soils for the production of crops are maintaining fertility, controlling erosion, and providing drainage. The groups are developed according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment.

[http://www.access.gpo.gov/nara/cfr/waisidx\\_04/7cfr657\\_04.html](http://www.access.gpo.gov/nara/cfr/waisidx_04/7cfr657_04.html)

Prime Farmland Soils include all those soils in Land Capability Class I and selected soils from Land Capability Class II. Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops that is available for agricultural uses. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. Prime Farmlands are not excessively erodible or saturated with water for long periods and infrequently flood or are protected from flooding. Most of the Borough's soils are not so classified (Table 13).

The initial step in conservation measures is the identification of land deemed valuable for protection. [Figure 16](#), Prime Farmland and Statewide Important Soils, can be used as a tool for identifying real and potentially valuable agricultural sites based on soils. The remaining 20 acres of agricultural land includes the horse farm preserved at Saddle Ridge County Park, located in the northwest and a small farm in the northeast section of the town. These farms are both located on soils classified as not prime farmland (76%), but preservation of the remaining farmland could still be a community planning priority for the conservation of historic features and open space purposes.

<b>Table 13: Prime Agricultural Soils</b>		
<b>Prime Ag Soils</b>	<b>Acreage</b>	<b>Percentage</b>
Prime farmland	570.64	9%
Farmland of statewide importance	727.19	12%
Farmland of unique importance	219.81	3%
Not prime farmland	4786.43	76%

### 3.17 Known Contaminated Sites

The NJDEP GIS database identifies Known Contaminated Sites (KCS) located within the Borough, based on the NJDEP 2005 database. The list of Known Contaminated Sites includes properties where contamination of soil or ground water has been identified by the NJDEP. These sites are listed in various stages of investigation and cleanup. The list of Known Contaminated Sites may include sites where a cleanup or remediation of the hazardous substance is either currently being investigated, required but not yet initiated, or has been completed. It is important to note that NJDEP does not update this list very frequently, and some of the cases may have been fully remediated and should no longer be included on this list. Additionally new contaminated sites may have been identified and are not included herein. For this reason, the identification of these sites was provided to Borough officials; however, these parcels are not identified in this report. Mapping of these sites can be reviewed on the NJDEP iMap program. <http://www.nj.gov/dep/gis/newmapping.htm> More detailed information can be obtained from the NJDEP Site Remediation Program and Waste Management (SRWM) program. [www.state.nj.us/dep/srp](http://www.state.nj.us/dep/srp).

#### **Groundwater Contamination Areas**

Some of the Known Contaminated Sites are identified as having a release with groundwater contamination. The cleanup, remediation or treatment of contaminated groundwater can take several years, and over time commercial or industrial properties may change ownership or change land uses. For these reasons the NJDEP has established Groundwater Classification Exception Area (CEA) as an institutional control such as a deed notice recorded with the County Clerk that defines an area where groundwater contaminants exceed the New Jersey Ground Water Quality Standards (NJGWQS). CEAs and deed notices inform potential future owners, as well as neighboring properties, regarding the presence of contaminated materials and contaminated groundwater. Mapping of these CEA areas can be reviewed on the NJDEP iMap program. <http://www.nj.gov/dep/gis/newmapping.htm>

The NJDEP GIS data layer identifies a groundwater CEAs related to a gasoline station in the Borough. Gasoline related compounds were detected in the groundwater including benzene, ethyl benzene, xylene, as well as MTBE (Methyl tert-butyl ether) and TBA (tertiary-butyl alcohol), which are oxygenated gasoline additives to boost octane levels.

Groundwater contamination areas may also entitle the State to pursue a cleanup or remediation as well as Processing a Natural Resource Damage Claim or Damage Claims Pursuant to the New Jersey Spill Compensation and Control Act N.J.A.C. 7:1J. When a CEA is designated for an area, the constituent standards and designated aquifer uses (such as drinking water supply) are suspended in the area for the term of the CEA. This information is important to local health departments, water supply companies, and utility workers, and is used by the NJDEP and local officials to make decisions concerning appropriate treatment and/or replacement of contaminated drinking water supplies. For further information about Classification Exception Areas visit:

<http://www.state.nj.us/dep/srp/regs/guidance.htm#cea> and  
<http://www.state.nj.us/dep/srp>

### **Deed Notice Areas**

This NJDEP data layer identifies those Known Contaminates Sites (KCS) or sites on the Site Remediation Program (SRP) Comprehensive Site List (CSL) that have been assigned a Deed Notice. Deed Notices are institutional controls for specifically defined areas where soil contamination has been detected at levels exceeding the NJDEP remedial cleanup guidelines for specific contaminants. The deed notice was developed to provide information regarding the spatial extent of soil contamination above the appropriate standard, as well as information regarding engineering controls such as paving, capping or fencing. The purpose is to help preserve adequate protection of these contaminated soil regions and help to minimize any chance of exposure. A deed notice is described (N.J.S.A. 58:10B-13a) as a "...notice to inform prospective holders of an interest in the property that contamination exists on the property at a level that may restrict certain uses of, or access to, all or part of that property. A delineation of those restrictions, a description of all specific engineering or institutional controls at the property that exist and that shall be maintained in order to prevent exposure to contaminants remaining on the property, and the written consent to the notice by the owner of the property". The NJDEP does not identify any Deed Notice areas for the contaminated sites in the Borough. Mapping of Deed Notice areas can be reviewed on the NJDEP iMap program. <http://www.nj.gov/dep/gis/newmapping.htm>

### 3.18 Impervious Cover

When precipitation falls to the earth, approximately 50% can return to the atmosphere through evaporation and through transpiration from plant leaves. Water can also runoff the land into receiving surface waters; or it can infiltrate into the ground. However, as a watershed becomes more developed, forests and farms are replaced by impervious surfaces such as roof tops, parking lots and roadways. This leads to greater volumes of surface water runoff and reduced ground water infiltration and groundwater recharge. Impervious cover can cause a greater volume of water to reach the waterway faster and lead to flooding after significant storms. In addition, less water is able to infiltrate to the ground water aquifers, which lowers ground water levels, and can reduce the base flow which feeds streams during dry periods. (NJDEP, Division of Watershed Management) <http://www.state.nj.us/dep/watershedmgt/>

The USEPA and the NJDEP support studies published by the Center for Watershed Protection (CWP) which utilizes general thresholds for imperviousness cover as a predictive tool to evaluate potential hydraulic and pollutant loads to streams, and serves as a general indicator of measuring overall stream health. These CWP studies suggest that once impervious cover exceeds 10% of the watershed, water quality impairment is evident, and at 25% - 30%, the stream health can become degraded by the increased stormwater runoff. Detrimental impacts from stormwater runoff can include scouring stream beds and stream banks, and degrading water quality from various nonpoint source pollutants, such as sediments, nutrients, hydrocarbons from petroleum products and car exhaust, heavy metals from tires and brake linings, as well as pesticides and fertilizers from lawn care.

The Impervious Cover for the Borough is depicted in [Figure 18](#), and indicates that the residential areas with an impervious cover of 0-20% encompass 90% or the vast majority of the community. Certain developed areas with impervious cover ranging from 20-40% include 5% of the community, and the commercial areas with impervious cover greater than 40% represent less than 5% of the community (Table 14). Large areas of impervious cover can negatively affect stream water quality by increasing the rate and volume of runoff and the quantity and types of pollutants contained in that runoff. This includes increases in nutrient loading (nitrogen and phosphorus) that can cause eutrophic conditions in lakes and streams. This increase in eutrophication is typically expressed as increased algae growth. Such conditions can impact dissolved oxygen levels in the water, resulting in fish kills and other adverse conditions for aquatic life. In addition, algae blooms or increases in aquatic macrophytes (weeds) can negatively impact swimming, boating and other recreational uses. To combat this, some communities promote or require a reduction in the application of fertilizers to public lands, and have enacted municipal-wide ordinances requiring that all lawn fertilizers have low or no phosphorus content.

<b>Table 14: Impervious Cover</b>		
<b>Percent Impervious Cover</b>	<b>Acres</b>	<b>% of Borough</b>
0-20%	5679.863	90%
20-40%	317.5172	5.0%
40-60%	36.67046	0.58%
60-80%	94.83766	1.5%
80-100%	175.1925	2.8%

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### 3.19 Watersheds and Surface Water Classifications

There are over twenty streams, lakes and ponds within the Borough. The LULC data estimates that waterbodies in the Borough account for approximately 287 acres. The community and various lake association neighborhoods value these streams, lakes and ponds as significant land marks and important aesthetic features within the community. These water bodies offer recreational opportunities for swimming, fishing, boating, as well as wildlife habitats for fish, turtles, raptors and migratory water fowl. These water features offer aesthetic scenic view sheds easily enjoyed from local roadways and hiking paths. The preservation of their water quality, aquatic habitats, recreational uses and aesthetic qualities are high priorities for the homeowner associations and local officials. The waterways are identified in Table 15 and on [Figure 19](#) along with their respective watersheds.

The USEPA defines a watershed or drainage basin, as the entire land area that drains into a body of water, such as a river, stream or lake. A watershed includes both the waterway and the land that drains to it. Each watershed is separated topographically by ridge top boundaries. The NJDEP has divided the state into twenty (20) Watershed Management Areas (WMA) based on large scale drainage area or Hydrologic Unit Code (HUC 11 drainage areas), and each watershed is evaluated separately to address water quality, biological diversity and water supply issues. Each Watershed Area also includes several smaller subwatersheds (HUC 14 drainage areas). The streams and tributaries within the Borough flow to three separate HUC 14 subwatershed areas including the Crystal Lake/Pond Brook subwatershed, Molly Ann Brook and Hohokus Brook, as depicted on [Figure 19](#).

The Surface Water Quality Standards establish designated water uses, classify streams based on uses, designate antidegradation categories, and establish water quality criteria to protect those uses. *Designated Uses* identified in the SWQS include: drinking water supply, fish consumption, shellfish resources, propagation of fish (trout) and wildlife, recreation, agricultural, and industrial water supplies.

<http://www.state.nj.us/dep/wms//sgwqt/200610swqs.pdf>

New Jersey has both fresh and saline waters and *Surface Water Classifications* are based on their designated uses and quality.

- Freshwaters are classified as FW1 (not subject to any man-made wastewater discharges) and FW2 waters (all other freshwaters).
- Freshwaters are further classified based on trout status, trout production (FW2-TP), trout maintenance (FW2-TM), and non-trout (FW2-NT).
- Saline waters are classified as saline estuarine (SE) and saline coastal (SC). SE waters are further classified into SE1, SE2, and SE3 based on the designated uses.
- Waters within Pinelands Protection and Preservation areas are classified as pinelands waters (PL).

<b>Table 15 : Subwatersheds and Waterbodies in the Borough of Franklin Lakes</b>				
<b>HUC 11 Watershed Mgmt Area</b>	<b>HUC 14 Subwatersheds</b>	<b>Stream Miles</b>	<b>NJDEP Classification</b>	<b>Lakes, Ponds and Wetland Complexes</b>
4- Passaic River Lower (Saddle River to Pompton)	Molly Ann Brook 02030103120040	17.01	Fresh Water 2 – Non-Trout (FW2-NT)	Molly Ann Brook Haledon Reservoir
4- Saddle River	Hohokus Brook (above Godwin Ave) 02030103140010	9.67	Freshwater – Saline Estuary FW2-NT/SE2	Hohokus Brook Parson's Pond Cook's Pond Tannery Pond Lawlin's Pond DeYoe's Pond Shadow Lake
3- Ramapo River	Crystal Lake/Pond Brook 02030103100060	16.58	Fresh Water 2 Non-Trout (FW2-NT)	Hopper's Crooked Lake Pond Brook Wetlands Franklin Lake Lower Lake Upper Lake Bakers Long Pond Vitalie's Pond Clarks Pond Kings Pond Pond Brook Conrad's Pond

### **Lake Management**

Approximately twenty streams, lakes and ponds are present in the Borough, including the Haledon Reservoir, Molly Ann Brook, Franklin Swamp (Pond Brook wetlands south), Franklin Lake, Hopper's Crooked Lake, Baker's Long Pond, Upper and Lower Lake, Vitale's Pond, Clark Pond, Conrad Pond, Kings Pond, Pond Brook (north), Lawlin's Pond, DeYoe Pond, Tannery Pond, Shadow Lake, Hohokus Brook, Parsons Pond, and Cooke's Pond. The Borough recently purchased the Haledon Reservoir, and the Haledon Reservoir Advisory Committee has prepared a report outlining various needs at the reservoir including removing debris from the wooded areas, and improving safety concerns and pedestrian access.

The Borough Environmental Commission is also working on completing the identification and field review of all the dams in the Borough. This inventory identifies a current list of the dams and their owners.

As mentioned previously, the Highlands Regional Master Plan has very specific Lake Management policies and recommendations for communities in regard to protecting and preserving water quality, and aquatic ecosystems. Many of these policies restrict disturbance and clearing of the 300 foot riparian zone at the lake shoreline. The Borough may wish to review these policies.

[http://www.highlands.state.nj.us/njhighlands/about/calend/2008\\_meetings/6e\\_lake\\_management\\_conformance\\_standards.pdf](http://www.highlands.state.nj.us/njhighlands/about/calend/2008_meetings/6e_lake_management_conformance_standards.pdf)

### **Surface Water Classifications**

New Jersey has established three levels of *Antidegradation Designations* for all waters of the State, and each stream is designated with a classification and antidegradation designation:

- Outstanding National Resource Waters (ONRW), Category One waters (C1), and Category Two (C2) waters.
- The NJDEP recently (2002-2007) expanded the number of streams designated as C1 based on Exceptional Ecological Significance, and Exceptional Water Supply Significance, including tributaries that fed water supply reservoirs and provide drinking water supplies, trout maintenance or production waters, and waterways that contain threatened or endangered species that are dependent on the waterway for their survival.
- The C1 anti-degradation polices restrict stormwater runoff and discharges that may degrade these water bodies. For example, stormwater runoff from new developments must satisfy a 90% reduction in total suspended solids and required sheet flow stormwater discharges. These waterways are also afforded a 300-foot protective riparian buffer.

<http://www.state.nj.us/dep/wms/bwqsa/swqshome.html>

### **Molly Ann Brook and Crystal Lake/Pond Brook Waterways**

In accordance with the SWQS the NJDEP has classified the Molly Ann Brook and Crystal Lake /Pond Brook watersheds in the Borough as freshwater non-trout streams (FW2-NT). Designated uses within these FW2 water bodies include the maintenance, migration and propagation of natural and established biota, contact recreation (swimming), industrial and agricultural water supply, and public potable water supply. In accordance with the SWQS, *all discharges to FW2 waters require permits, and pollutants shall not be at levels toxic to humans or aquatic biota, nutrients shall not be in concentrations that render waters unsuitable for designated use, and there shall not be other changes in use or chemistry that are not deemed reasonable by the state.*

The State also classifies freshwaters on their ability to support trout and other species of fish. This classification is made because Salmonids (trout family) are reliable indicators of water quality. Trout typically survive in waters with high dissolved oxygen levels, low turbidity, and low temperatures. The Molly Ann Brook and Crystal Lake/Pond Brook waterways and their tributaries are classified as Non-Trout (NT) streams. Non-Trout streams are unable to support trout populations through the year, although they may be stocked with trout seasonally. Trout Production streams are those used by trout for spawning and/or nursery purposes, while those classified as Trout Maintenance have the potential to support trout populations throughout the year.

### **Hohokus Brook Waterways**

The Hohokus Brook is classified as a freshwater that drains to a saline estuary bay. The NDEP has identified that the Hohokus Brook and its tributaries drain to saline waters. Because there is a salt water/fresh water interface, the NJDEP classified the Hohokus Brook as FW2-NT/SE2. The exact demarcation between the fresh and saline waters is determined by salinity measurements and is that point where the salinity reaches 3.5 parts

per thousand at mean high tide. The Hohokus Brook is classified as FW2-NT in the upstream freshwater portions (salinity less than or equal to 3.5 parts per thousand at mean high tide) and SE2 in the downstream saline portions.

### **Stream Corridor Protection**

Riparian zones play a critical role in maintaining the quality and ecological integrity of streams, provide protection against floods, help to ameliorate the effects of prolonged droughts, and provide important habitat including rare, threatened, endangered species in the State. These protective riparian zones are established pursuant to the 2007 Flood Hazard Area Control Act rules (N.J.A.C. 7:13) for the protection of water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries. As previously described, the freshwater non-trout streams are now provided a 50-foot buffer, upgraded from 25 feet. However, several communities have adopted stream corridor ordinances that protect riparian zones of 100 feet or more from development and disturbances.

[http://www.nj.gov/dep/rules/adoptions/2004\\_0202\\_watershed.pdf](http://www.nj.gov/dep/rules/adoptions/2004_0202_watershed.pdf)

Additionally, any streams having documented threatened and endangered species have minimum riparian zone of 150 feet and any Category 1 streams have riparian zone of 300 feet.

3.20A Water Quality / Amnet Biological Data

The NJDEP conducts biological sampling at stations statewide, which entails assessing the diversity of macroinvertebrates communities (insects, crustaceans, and mollusks) living within the stream. This data is recorded as the NJDEP Ambient Biomonitoring Network or AMNET biological data. The NJDEP has sampled one station (ANO283) in the Borough located on Hohokus Brook at Old Mill Road just downstream from DeYoe's Pond. The AMNET biological samples collected from station AN0283 were identified as moderately biologically impaired for 1994 and 2004 (Table 16). However, in 1999, the stream was identified as not impaired. (Figure 20)

Station #	Station Location	Round 1 (1994)	Round 2 (1999)	Round 3 (2004)
AN0283	Hohokus Brook Downstream from DeYoe's Pond	Moderate Biological Impairment	Non- Impaired	Moderate Biological Impairment

Statewide, the 2007 NJDEP AMNET data identified approximately 20% of the streams as excellent water quality. Twenty-two (22%) of the streams were identified with good quality, 41% were identified as fair, and 17% were listed as poor water quality in 2007. The Moderately Impaired water quality of the Hohokus Brook in the Borough would be included in the category of fair water quality.

NJDEP Environmental Trends Update 2005, Fresh Water Pollution: Streams: Ambient Biomonitoring Network & Fish Index of Biotic Integrity Network.

<http://www.nj.gov/dep/dsr/trends2005/pdfs/freshwater-pollution.pdf>

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3.20B Surface Water Impairments And TMDL Implementation  
Priorities

The Federal Clean Water Act (CWA) (33 U.S.C. 1315(B)), requires the State of New Jersey to prepare and submit to the USEPA a biennially report addressing the overall water quality of the State's waters. This report is referred to as the *New Jersey Integrated List of Waterbodies*, which summarizes the Section 305(b) Report regarding Water Quality and the Section 303(d) List of Impaired waters. The Integrated Report identifies water quality in accordance with N.J.A.C. 7:15-6 and the Surface Water Quality Standards.

The NJDEP routinely samples and monitors the water quality conditions throughout the state to ensure a high quality for drinking water and to evaluate the health of rivers and major tributaries. This water quality data is incorporated into the New Jersey Surface Water Integrated Report. NJDEP sampling is conducted for the Crystal Lake/ Pond Brook watershed and on the Hohokus Brook (sampling station # 01390610 within the Borough), and the streams were identified as being impaired by elevated fecal coliform (pathogen) levels (Figure 20). The NJDEP has adopted a Total Maximum Daily Load (TMDL) to reduce the pathogen loading in the streams. The sources of the fecal coliform have not been fully identified but could likely include the combination of stormwater runoff and discharges of poorly treated wastewater, failing septic systems, livestock (local horse farms), wildlife and/or geese.

In addition, the Crystal Lake/ Pond Brook watershed was identified as being impaired by elevated concentrations of total phosphorous. The NJDEP also adopted a Total Maximum Daily Load (TMDL) to reduce the total phosphorous loading in the Crystal Lake/ Pond Brook watershed. A summary of the documented water quality impairments and the TMDLs in the Borough streams is outlined in Table 17.

The NJDEP defines a Total Maximum Daily Load as representing the assimilative or carrying capacity of a waterbody, taking into consideration point and nonpoint sources of pollutants, natural background and surface water withdrawals. A TMDL quantifies the amount of a pollutant that a water body can assimilate without violating a state's water quality standards. A TMDL is developed as a mechanism for identifying all the contributors to surface water quality impacts and setting goals for load reductions for pollutants of concern as necessary to meet the SWQS. TMDLs serve as management approaches or restoration plans aimed at identifying the sources of fecal coliform and for setting goals for fecal coliform load reductions in order to attain applicable surface water quality standards (SWQS). TMDLs are formally established pursuant to Section 7 of the Water Quality Planning Act (N.J.S.A. 58:11A-7) and Section 303(d) of the Clean Water Act, 33 U.S.C. §§1251 et seq.

The NJDEP has identified the following TMDL Priorities for the subwatersheds in the Borough.

<b>Table 17: TMDL Priorities for the Borough of Franklin Lakes</b>				
<b>HUC14</b>	<b>Water_Type</b>	<b>WMA SUBWATERSHED</b>	<b>Pathogens for Primary Recreation (Swimming)</b>	<b>Total Phosphorus TP</b>
02030103120040	Fresh Water FW2-NT	#4 /Molly Ann Brook	Insufficient Data (Sublist 3)	none
02030103140010	Estuary_Bay FW2-NT/SE2	#4/ Hohokus Bk (above Godwin Ave)	TMDL to reduce pathogens (Sublist 4A)	none
02030103100060	Fresh Water FW2-NT	#3/Crystal Lake/Pond Brook	TMDL to reduce pathogens (Sublist 4A)	TMDL to reduce TP (Sublist 4A)

The Surface Water Quality Standards establish varying bacteria (pathogen) standards dependent upon whether the waterbody is freshwater or saline.

[http://www.state.nj.us/dep/wms/bwqsa/docs/0608\\_SWQS.pdf](http://www.state.nj.us/dep/wms/bwqsa/docs/0608_SWQS.pdf)

<b>Primary Contact Recreation: swimming and wading</b>	
(1) Enterococci levels shall not exceed a geometric mean of 35/100 ml, or a single sample maximum of 104/100 ml.	SE1 and SC
(2) E. Coli levels shall not exceed a geometric mean of 126/100 ml or a single sample maximum of 235/100 ml.	All FW2
<b>Secondary Contact Recreation: boating and fishing</b>	
(1) Fecal coliform levels shall not exceed a geometric mean of 770/100 ml.	SE2
(2) Fecal coliform levels shall not exceed a geometric mean of 1500/100ml.	SE3

### 3.21 FEMA Flood Hazard Zones

A floodplain is the relatively flat area adjoining the channel of a natural stream, which is routinely covered with water during storm events. Floodplains are integral parts of the hydrologic cycle of a region, and primarily serve to temporarily store floodwaters during intense precipitation events, and slowly release excess runoff. Additional important functions of floodplains are the ability to recharge groundwater and improve water quality by filtering runoff.

As stormwater runoff traverses the floodplain, established vegetation improves water quality by trapping sediments and pollutants before they enter the receiving water. Conversely, floodplains also store excess sediments which are deposited during flooding events. This deposition of nutrient rich sediments in floodplains has historically made farming of these areas attractive. Vegetation along the stream bank also anchors and stabilizes the soils, effectively reducing erosion and providing shade to maintain water temperatures. Floodplains generally include the riparian zone adjacent to the stream, and provide wildlife habitat for many rare species.

The source data for the accompanying [Figure 21](#) was obtained from the Federal Emergency Management Agency (FEMA). Two standard flood zones commonly used to describe flood events are the 100-year and 500-year flood zone. The term 100-year flood zone is also known as the Flood Hazard Area. Characterization of flood zones is based upon flooding probability. Thus, a 100-year flood is described as a flood elevation that has a 1% chance of being equaled or exceeded each year. Although there are twenty lakes, ponds and streams within the Borough, the vast majority of the community (87%) lies outside of the federally designated FEMA flood zones. Approximately 613 acres or 9.7% of the Borough is located within the designated 100 Year FEMA Flood Hazard Area (Table 18). The roadways and neighborhoods within the downstream portions of Hohokus Brook encompass the majority of these flood zones and may be more susceptible to flooding events. Additional 100 Year flood zones are also located along Vitale's Pond and Clark Pond. Housing and roadways along Pond Brook are located with the 500 Year FEMA flood zone, and flooding in these areas occurs less frequently.

The Base Flood Elevation (BFE) is the height of the 100-year flood, or base flood, referenced to a controlled, vertical scale. The 100-year flood zone can be calculated using the BFE obtained from detailed area-specific hydraulic analyses. Conversely, the 100-year flood zone can be established without a BFE in less well-studied areas through approximations modeled on area topography. Terminology describing flood events in defined periods is misleading because these flood zones are based on exceedance probabilities not periodicity. Therefore, 100-year flood events may occur closely together within the space of a single year or on time scales greater than 100 years.

While floodplains may be aesthetically pleasing because of the proximity to water, these areas are not recommended for development. Development within floodplains alters storage capacity and flow characteristics elsewhere in the drainage system. The current

Flood Hazard Area Control Regulations (N.J.A.C. 7:13) restrict new development and disturbances, and clearing of woodlands within riparian zones of floodplains ([Figure 21](#)).

<b>Table 18: FEMA Floodplains within the Borough</b>		
	Acres	% of Borough
A: Areas within the 100 Year Flood Zone with no Base Flood Elevations (BFEs)	422.09	6.7%
AE: Areas within the 100 Year Flood Zone with Base Flood Elevations (BFEs)	191.66	3.0%
X: Areas outside the 500 Year Flood Zone	5497.83	87.21%
X500: Areas within the 500 Year Flood Zone	192.50	3.1%

### 3.22 Open Space and Preserved Lands

In their 2006 report entitled, “*The Benefits of Parks*”, the Trust for Public Lands (TPL) describes how parks and open space improve our physical and psychological health, strengthen our communities, and make our cities and neighborhoods more attractive places to live and work. TPL, 2006 [www.tpl.org](http://www.tpl.org)

Open Space can include parklands for active and passive recreational uses, water bodies, ridgelines, woodlands, grasslands, and agricultural lands (Table 19). Open space can include lands acquired or donated to the community, including lands protected with a Conservation Easement. Areas designated for open space can protect many environmental resources, such as wildlife habitats, the quality and quantity of surface and groundwater, cultural and historic areas, and view sheds. Open space acquired now can serve to satisfy the recreational needs of residents as development occurs in the future. The goals of open space preservations seek to promote recreational opportunities, preserve wildlife habitats, maintain hydrologic functions, viable agricultural uses, and preserve scenic views.

The Borough does not collect an open space tax, but has been successful in preserving open space, parks and woodlands in the community ([Figure 22](#)). Access to matching open space grants from the state and county are available for communities with an open space tax or stable funding source. The *Municipal Open Space and Recreational Plan* was prepared for the Borough in 2002 by Maser Consulting. According to this report, approximately 247 acres are preserved as open space within the Borough, and with the acquisition of the 127 acres for the Haledon Reservoir in 2006, the total open space acreage equals 374 acres.

The Open Space Plan reported in 2002 that forty (40) acres were developed as active recreational facilities, and the majority of the open space is either wetlands or open waters. The Borough Recreation Commission also utilizes athletic fields owned by the Franklin Lakes Board of Education (High Mountain Road School and Colonial Road School), the Indian Trail Club and the Most Blessed Sacrament School fields for organized sports programs. The report explains that 50% of the community youth participate in recreational activities and additional facilities were needed. The Open Space Plan explains that the developed recreational land satisfies only 50% of the parkland acreage recommended by federal, state and county officials of 8 acres per 1,000 people. Another component in the Borough was the limit or lack of mini-parks or neighborhood parks. In 2002, the Borough conducted a survey of viable lands greater than 2 acres in size to serve as potential recreational sites; however, many sites were found to be constrained by wetlands or highway uses.

Since 2002 the Borough has completed connecting trails, a senior center, lighted ballfields, an artificial turf field, and roller hockey rink at the Pulis Center. The report recommends that the Borough acquire land south of Route 208 to ensure that recreational opportunities will remain viable in the future, including the Haledon Reservoir and the High Mountain Golf Club. The Golf Club is zoned to allow single family homes, and is the last remaining open space parcel in the community that could accommodate recreational uses with limited constraints by wetlands.

Recreational opportunities within the Borough include: municipally-owned recreational fields, the Board of Education playing fields, and pedestrian trails. Regional recreational opportunities include tennis courts, basketball, playing fields, as well as passive recreational opportunities, such as hiking and bird watching. Swimming beaches, fishing and boating docks are provided at private lake association facilities.

Pedestrian trails and greenways have been established to link residents to parks, schools and businesses. In addition to their recreational use, the creation of pedestrian trails and greenways is meant to provide safe, alternative means of transportation for residents. The community could examine existing pathways to identify additional areas where the greenways and trails can be extended. With public support, additional open space acquisition or conservation easements can be obtained.

### **Bergen County Facilities**

Bergen County owns and operates the Saddle Ridge Horseback Riding facility in the Campgaw Reservation (106 acres). The following recommendations are provided for this parkland:

- The Borough should work to ensure that the horse riding facility has appropriate practices for manure storage/disposal and that this facility is not impairing local waterways with fecal coliform.
- The Saddle Ridge parkland is valued for its scenic viewshed, but hiking trails in the parkland are limited. The Borough could consider working with the County to expand access and trails in this park, for the enjoyment of the forested habitat and scenic views.
- The United Water New Jersey may petition to install a water tower within the Saddle Ridge parkland. If this application is submitted, it would be considered a “diversion of publically owned open space” for purposes other than recreation or conservation use. Under the NJDEP Green Acres rules (N.J.A.C. 7:36-25), local governments and nonprofits seeking to divert public parkland to other uses would be required to give the public greater notice of and opportunity to comment on such proposals. In cases in which diversions are approved, local governments and nonprofits generally would be required to preserve at least twice as much land as they divert. Major diversions would be subject to more stringent requirements. <http://www.nj.gov/dep/greenacres/regs.pdf>
- In regard to the potential construction of a water tower, the community should also work to ensure that the obstructions to the viewshed are minimized, and that appropriate mitigations are provided for the diversion.

The Bergen County Open Space, Farmland and Historic Preservation Trust Fund collects a one cent tax, and was established for the preservation of lands for recreation, conservation, general open space, farmland preservation and historic preservation. Municipalities can apply to the Open Space Advisory Board for Trust Fund grants to prepare planning documents or for preservation and acquisition of lands for recreation, conservation, and farmland purposes. Municipalities may also apply for County Trust Funds toward retiring new debt service incurred for eligible acquisition purposes. Additional information about the County Open Space Trust Fund can be found at the Bergen County website at <http://www.co.bergen.nj.us/openspac.htm>.

**Table 19: Open Space in Franklin Lakes**

	<b>Parkland Name and Location Description</b>	<b>Parkland Description</b>	<b>Block/Lot</b>	<b>Acres</b>	<b>Comments</b>
1	401 Pulis Avenue	Active recreational fields, roller hockey rink, senior center, trails	Bk 2547 Lt 1	49.57	Pedestrian trails are present, but additions to the trail network could be considered.
2	Tennis Courts 740 Old Mill Road	Tennis Courts, playground, trails	Bk 2547.01 Lt 2	11.27	Pedestrian trails are present.
3	Municipal Fields 480 DeKorte Drive	Active recreational fields, trails, pond, and playground	Bk 2547.01 Lt 3	44.14 total acres 34.54 recreational acres	Pedestrian trails are present.
4	Fireman Fields 565 Franklin Avenue	Baseball, soccer, forests	Bk 2413 Lt 1.03	4.56	Limited pedestrian accessibility
5	Green Acres Old Mill Road	Mature forest, streams, habitat	Bk 2514 Lt 4	10.58	Not accessible
6	701 Old Mill Road	Mature forest, streams, habitat	Bk 2547.03 Lt 2	19.88	No defined access
7	High Mountain Road	Mature forest, streams, wetlands, habitat, scenic view	Bk 2203 Lt 1.07	2.32	Limited pedestrian accessibility
8	Franklin Swamp	Wetland habitats	Bk 1110 Lt 1	62.4	
9	Franklin Swamp	Wetland habitats	Bk 2101.08 Lt 1	18.53	
10	McBride Fields 810 Franklin Lake Road	Active recreational fields	Bk 2203 Lt 1	20.54	
11	Tannery Pond Woodside Avenue	Open waters, forests,	Bk 27.01 Lt 1	12.86	In 2002, the Borough was considering acquiring an adjacent parcel of forests, 17.45 acres on 250-260 Woodside Avenue
12	Haledon Reservoir	Open waters, forests, wetlands, and passive trails		127 acres	Acquired in 2006, and the Borough is addressing safety concerns and access.
		<b>TOTAL</b>		<b>374 acres</b>	

### 3.23A NJDEP Wetland Designations

Legal classifications of wetlands are based on a functional definition of wetlands that is commonly called the three-parameter approach and is outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. The three parameters defining wetlands are hydric soils, hydrophytic vegetation that is typically adapted for life in saturated conditions, and area hydrology that includes inundation or saturation by surface or groundwater at a frequency and duration to support hydrophytic vegetation. All three parameters must be met to qualify as a wetland. Therefore, areas with hydric soils are not wetlands if they do not meet hydrology and vegetation standards. Wetlands protection in New Jersey is regulated by the Freshwater Wetlands Protection Act, N.J.S.A 13:9B ([http://www.state.nj.us/dep/landuse/13\\_9b.pdf](http://www.state.nj.us/dep/landuse/13_9b.pdf)).

Formerly regarded as wastelands, wetlands are now recognized as important features of the landscape and provide many functions that are beneficial to people and wildlife. Wetlands are an important component of regional hydrology, storing excess stormwater runoff and serving as a link with groundwater resources. The ability to mitigate runoff quantity is mirrored in the ability to improve runoff quality. Wetlands improve water quality by trapping sediments, nutrients, and other pollutants released in the watershed; these contaminants are generally associated with agricultural, commercial, and residential development. This process is accomplished by plant and microorganism uptake, adsorption to soil particles, and physical filtering created by vegetation.

Wetlands are also critical to biological productivity. Wetlands are among the most productive ecosystems in the world, as evidenced by the wide variety of flora and fauna that they host. Wetland plants provide breeding and nursery sites and resting areas for migratory species. Wetlands are also the permanent home to some of New Jersey's threatened and endangered species. Decomposition of vegetation within wetlands plays an important role in many food webs, as decomposed organic matter forms the base of the aquatic and terrestrial food web.

The NJDEP utilized local soil data, 2002 aerial photographs and vegetative cover to produce the wetland data utilized in [Figure 23](#). It is important to note that this data is not field verified and may significantly underestimate wetland area. In addition, the wetlands defined here are based on photographic interpretation, not on field verified surveys, which would follow the three-parameter approach of wetland definition and more accurately define wetland bounds. As such, the wetland boundaries displayed on this Figure are general and do not preclude the need for formal delineation as part of any development, disturbance, or regulated activity.

The NJDEP GIS datalayers identify 464 acres of wetlands present in the Borough, which entails 7.4% of the land use cover (Table 20). These wetlands are largely confined to riparian corridors and floodplains along the various streams and tributaries in the Borough. The vast majority (92.7%) of the wetlands in the Borough are described as deciduous wooded wetlands. Deciduous scrub/shrub wetlands with successional woody growth are the second most common wetland type with 4.6% in the Borough. Wetlands dominated by the invasive species, phragmites were identified on 3.8 acres, and measures to control the spread of phragmites could be considered.

These resources are protected by State regulations as defined by Wetland Protection Act and Rules (N.J.S.A 13:9B and N.J.A.C. 7:7A). The New Jersey wetland rules protect wetlands and buffer areas (transition areas) from being disturbed in order to protect their natural functions to store floodwaters, provide stream base flows and provide wildlife habitats. Development or disturbances are restricted within the wetlands and a 50 foot transition area, or protective buffer. For wetlands where threatened or endangered species are documented, this protective transition buffer can be increased to 150 foot. However, within New Jersey approximately 1,000 acres of wetlands continue to be lost to development each year.

<b>Table 20: Wetlands within Franklin Lakes</b>		
<b>Wetland Type</b>	<b>Acres</b>	<b>%</b>
Agricultural Wetlands (Modified)	1.70	0.37%
Deciduous Scrub/Shrub Wetlands	21.43	4.62%
Deciduous Wooded Wetlands	430.39	92.70%
Disturbed Wetlands (Modified)	1.14	0.25%
Herbaceous Wetlands	1.09	0.23%
Managed Wetland In Built-Up Maintained Rec Area	1.09	0.24%
Managed Wetland In Maintained Lawn Greenspace	3.58	0.77%
Phragmites Dominate Interior Wetlands	3.85	0.83%
	464.28	100%

### 3.23B NJ Landscape Project and Natural Heritage Program

With eight million people living in New Jersey, one indicator of stress on the state's ecosystems is the growing number of species that are designated as rare or endangered species. In New Jersey nearly one third of the vertebrate animal species found in the state are classified as rare or endangered (NJ Trends, 2005).

The NJ Department of Environmental Protection, Division of Fish and Wildlife (NJDEP-DFW) defines *Endangered Species* as those species whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. NJDEP defines *Threatened Species* as those who may become endangered if conditions surrounding them begin to or continue to deteriorate. These threatened and endangered species are identified and protected in accordance with the Nongame Species Conservation Act. (N.J.S.A. 23:2A-1 et seq.) [www.nj.gov/dep/fgw/spclspp.htm](http://www.nj.gov/dep/fgw/spclspp.htm)

The New Jersey Natural Heritage Program identifies the state's most significant natural areas through a comprehensive inventory and GIS mapping of rare plant and animal species and representative natural communities. Specifically, the Natural Heritage Database compiles information of the distribution, biology, status, and preservation needs of identified species and communities. Imperiled species tracked by the database are identified by Federal and State Endangered Species Act, Endangered Plant Species Act, Endangered and Nongame Wildlife Act, and additional rare species under investigation. The database is continually updated and serves as the comprehensive source of information on rare plants, animals, and natural communities in New Jersey. This information can be used to identify areas of high natural diversity, locate rare species, and supplement field surveys conducted to assess project impacts on natural diversity and critical areas.

(<http://www.state.nj.us/dep/parksandforests/natural/heritage/index.html>).

The Landscape Project was developed initially by New Jersey Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) in 1994, and was adopted to utilize a landscape level approach to imperiled species protection. The landscape approach focuses on large tracts of land, called landscape regions, which are ecologically similar in regards to their plant and animal communities composed of critical wildlife areas. In 2002, utilizing a combination of land cover data and an extensive database of rare species locations, the Landscape Project published GIS mapped areas of critical importance for imperiled species within five distinct landscape region or habitat type including: grassland, forest, forested wetland, emergent wetland and beach/dune. Grasslands must meet a minimum size of 18 hectares (44.46 acres) to be recognized by the Landscape Project. Forests must meet a minimum core size of 10 hectares (24.7 acres). Additional information can be found online about the New Jersey Landscape Project and New Jersey's threatened and endangered species.

([www.state.nj.us/dep/fgw/ensp/landscape/lp\\_report.pdf](http://www.state.nj.us/dep/fgw/ensp/landscape/lp_report.pdf))

([www.state.nj.us/dep/fgw/tandespp.htm](http://www.state.nj.us/dep/fgw/tandespp.htm)).

The Landscape Project delineates critical habitat patches based on the species present and their conservation status which are ranked from common to most rare. Areas with federally threatened or endangered species receive the highest ranking (5), followed by state endangered (4), state threatened (3), state species of priority concern (2), and finally suitable habitat for more common species (1). This ranking system is described in the Table 21 below. Ultimately, this information can assist state, local and private agencies in prioritizing areas that could be preserved to protect habitat for rare species. This information also serves to alert officials to ensure that any future development minimizes disturbances to these critical habitat areas.

<b>Table 21: NJDEP Landscape Project Ranking System</b>		
<b>Rank</b>	<b>Title</b>	<b>Description</b>
<b>1</b>	Suitable Habitat	Patches that meet habitat-specific suitability requirements such as minimum size criteria for endangered, threatened or priority wildlife species, but that do not intersect with any confirmed occurrences of such species
<b>2</b>	Priority Concern	Patches containing one or more occurrences of at least one non-listed State priority species
<b>3</b>	State Threatened Species observed	Patches containing one or more occurrences of at least one State threatened species
<b>4</b>	State Endangered Species observed	Patches with one or more occurrences of at least one State endangered species
<b>5</b>	Federally Listed Species observed	Patches containing one or more occurrences of at least one wildlife species listed as endangered or threatened on the Federal list of endangered and threatened species

**The New Jersey Wildlife Action Plan (WAP)**

The NJDEP- Division of Fish and Wildlife recently published the *New Jersey Wildlife Action Plan (WAP)* in January 2008, which describes important and vulnerable wildlife and their habitats throughout the State. The Plan provides conservation goals and strategies to protect threatened and endangered species and priority species of concern from becoming more vulnerable. The WAP summarizes the current status of wildlife and their habitats and outlines various conservation goals and strategies for five distinct Landscape Regions in State including: the Atlantic Coastal, Delaware Bay, Piedmont, Pinelands, and Skylands Landscape regions. The following information is briefly summarized from this comprehensive report.

[www.njfishandwildlife.com/ensp/landscape/lp\\_report.pdf](http://www.njfishandwildlife.com/ensp/landscape/lp_report.pdf)

**Habitats within the Northern Piedmont Plains**

The *New Jersey Wildlife Action Plan* describes the Borough as being located within the Northern Piedmont Plains Landscape region, which includes portions of eight counties in northeastern New Jersey. This zone is extensively developed, and only about 10 percent of this entire area is considered suitable for wildlife of conservation concern. The Palisades Interstate Park, Great Swamp National Wildlife Refuge, Hackensack Meadowlands, Preakness Mountain, and the network of riparian habitat and public land (mainly county land and watershed protection lands) provide habitat for the majority of endangered and threatened wildlife habitat in this zone.

The *New Jersey Wildlife Action Plan* describes the Northern Piedmont Plains as characterized by highly developed areas with scattered (fragmented) tracts of forest and wetlands. The larger undeveloped tracts near these urban settings are often preserved as public lands or by land trust organizations. Protecting forests that are located in either uplands, wetlands and riparian zones are high-priority habitats in this zone, that should be maintained and allowed to increase in age and size if possible.

### **Wildlife of Greatest Conservation Need in the Northern Piedmont Plains**

The wildlife information presented herein pertains to the larger Northern Piedmont Plains region and is not specific to the Borough. The Northern Piedmont Plains supports limited populations of vulnerable wildlife species designated as threatened or endangered species by state or federal agencies. Within the Northern Piedmont Plains there is habitat that supports one federally threatened species, 14 state endangered species, 12 state threatened species, 71 special concern and regional priority species, and 7 harvested species of regional priority. Critical wildlife habitat information specific to the Borough from the NJDEP Landscape Data is depicted for Vernal Pools- [Figures 24](#), Wetlands- [Figure 25](#) and Forests -[Figure 26](#).

Extensive rivers and streams and associated riparian habitats throughout the Northern Piedmont Plains provide habitat for a variety of forest reptiles and amphibians including wood turtle, box and spotted turtles, blue-spotted and northern spring salamanders. These riparian zones provide foraging and breeding areas for colonial waterbirds (mainly herons and egrets). Species of special concern and regional priority include grassland dependent species, scrub-shrub birds, marsh birds, forest passerines, raptors, reptiles, amphibians and invertebrates. In addition, summer populations of forest-dwelling bat species are known to occur in the Northern Piedmont.

Although not abundant in this zone, scattered grasslands in the Northern Piedmont Plains provide habitat for savannah, grasshopper, and vesper sparrows; northern bobwhite quail, bobolinks, northern harriers, and two insect species, the American burying beetle and Harris' checkerspot (butterfly). A complete list of Regionally Important Wildlife in the Northern Piedmont Plains is provided in Appendix F.

The greatest threat to wildlife in the region is habitat loss, habitat fragmentation, and habitat degradation from development and roadways. A more detailed discussion of habitat fragmentation is provided in the presentation of forests habitat in the community.

The NJDEP Office of Science and Technology, reports that deer can affect the ecosystem at many levels. Deer can have negative impacts on humans, including car collisions, losses of agricultural and landscaped plantings, and the potential for harboring diseases that are transmissible to man or domestic animals (Lymes disease). Deer browsing can determine the composition of forests, and tree seedlings are especially vulnerable to over-browsing. Studies in Pennsylvania have revealed a loss in plant and animal biodiversity as deer populations exceed 10 per square mile.

<http://www.nj.gov/dep/dsr/trends2005/pdfs/wildlife-whitetail.pdf>

The disturbance of forested riparian zones or stream buffers leads to habitat loss, increased water temperatures, and polluted runoff which degrade these ecosystems. Invasive plants, such as the common reed or phragmites, and purple loosestrife can severely reduce suitability of wetlands for marsh nesting birds.

Many forest and grassland bird species are area sensitive and their populations decline as habitat size decreases. Mowing of fields and utility rights of way (ROW) during breeding seasons (mid-April through July) increases mortality and reduces productivity of many birds, reptiles, amphibians, invertebrates, and small mammals.

### **Wildlife Conservation Goals**

Wildlife and habitat conservation goals outlined in the NJ Wildlife Action Plan for the Northern Piedmont Plains region include the following items:

- Identify, protect, enhance, and restore large critical habitats focusing on forest-interior passerines, raptors, forest-dwelling bats, and other forest dwelling species.
- In grassland habitat (areas with >75 % herbaceous and <25% woody vegetation) and scrub-shrub habitats (areas with >25% woody vegetation <20 feet in height) identify, protect, enhance, and restore habitats where grassland bird populations and butterfly communities currently exist.
- Protect, maintain and/or enhance critical aquatic habitats, freshwater and coastal wetlands, and water quality to preserve populations of rare wildlife such as wood turtles, long-tailed salamanders, rare damselflies and dragonflies, and state or federal listed special concern and coldwater fish species.
- Prevent and reverse declines of the Allegheny woodrat, peregrine falcon, reptiles and amphibians, birds, butterfly species of conservation concern, and native fish species, and conserve and enhance native, wild trout populations.
- Assess large scale habitat change. Maintain ecological integrity of natural communities and regional biodiversity by controlling invasive species and overabundant wildlife.
- Preserve the ecological quality and integrity of vernal pool communities.
- Protect, enhance and restore coldwater fish habitat and ecosystems.
- Protect and enhance bald eagle nesting and foraging and roosting habitat.
- Promote public education and awareness, wildlife conservation and participation in habitat restoration efforts.

<b>Table 22: Threatened and Endangered Species listed for Franklin Lakes, NJDEP Landscape Project 2008</b>		
<b>Species</b>	<b>NJDEP Designation</b>	<b>Preferred Habitat</b>
Bobcat	State Endangered Species	Upland Forests and Forested Wetlands
Red-shouldered Hawk	State Endangered Species	Upland Forests and Forested Wetlands
Timber Rattlesnake	State Endangered Species	Upland Forests and Forested Wetlands
Barred Owl	State Threatened Species	Upland Forests and Forested Wetlands
Marbled Salamander	Species of Priority Concern	Wetlands, Upland Forests and Forested Wetlands
Eastern Box Turtle	Species of Priority Concern	Grasslands, Upland Forests and Forested Wetlands
Fowler's Toad	Species of Priority Concern	Grasslands, Upland Forests and Forested Wetlands
Gray Catbird	Species of Priority Concern	Upland Forests and Forested Wetlands
Tiger Spiketail*	Rare, not listed	Water, Wetlands

The Tiger Spiketail a dragonfly that is rare in northwest New Jersey. Populations had been reported in the past in Bergen County, but these populations are potentially extirpated, or no longer present.

<http://njodes.com/Speciesaccts/spiketails/spik-tige.asp>

### 3.24 Vernal Pool Habitats

Vernal pool habitats are narrowly defined ephemeral wetlands that are characterized by confined hydrologic pools or basins and ecological function. To be classified by the NJDEP as a vernal habitat, standing water must be present in the pool for at least two continuous months between March and September in a year of normal rainfall. Ecologically, vernal pools must harbor documented obligate or facultative vernal habitat species such as frogs and salamanders as listed by NJDEP, and be free of fish populations. Characteristic obligate species include amphibians such as the mole salamanders (*Ambystoma spp.*), and Wood frog (*Rana sylvatica*), but are equally important to facultative wildlife such as state threatened Wood turtle (*Glypternys insculpta*). Obligate species may be defined as those species that are dependent on vernal habitats at some stage of the life cycle, while facultative species are those species that frequently utilize vernal pool habitats but are capable of reproducing outside of vernal habitats.

Statewide, the number of vernal pool habitats has declined drastically because of increased development and limited regulatory protection in the past. However, with the approval of the Freshwater Wetlands Protection Act Rules in 2001, vernal habitats became specifically protected. Filling, altering, draining or otherwise compromising the hydrological or ecological function of vernal habitats should be avoided and these activities are subject to NJDEP review and approval

The NJDEP's Endangered and Nongame Species Program established the Vernal Pool Habitat Project, which is a dedicated effort to map and survey vernal habitats throughout the state. One potential vernal pool habitat has been documented by the NJDEP within the Borough, but more are likely present in floodplain and wetland areas and is depicted on [Figure 24](#). This vernal pool has not been certified by the NJDEP yet, but trained residents can submit photographs, record water depths, and provide documentation of wildlife that is observed in order to facilitate the certification of this vernal pool. Future development projects should ensure that these critical habitats are identified, and are protected from disturbance. The NJDEP requires a 150 foot protective buffer for certified vernal pool habitats.

Much of the NJDEP's mapping efforts have been completed through trained volunteer surveys and a partnership with Rutgers University's Center for Remote Sensing and Spatial Analysis. Additional information can be found online at:

(<http://www.state.nj.us/dep/fgw/ensp/vernalpool.htm>)

(<http://www.dbcrrsa.rutgers.edu/ims/vernal/>).

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### 3.25 Landscape Critical Wetland Habitats

A map of the critical wildlife habitat present within the Borough wetlands is presented in [Figure 25](#). This figure was created from the NJDEP GIS datalayers for wetlands and the NJDEP Landscape Project Data for wetland habitats.

Extensive rivers and streams and associated riparian habitats and 464 acres of wetland habitats are present in the Borough, which provide habitat for a variety of forest reptiles and amphibians (Table 23). Based on the NJDEP Landscape Project Data, the approximately 103 acres of forested wetlands are present which provide habitat for State Threatened and Endangered species, and species of concern that could include: bobcat, barred owl, and marbled salamander. Species of priority concern for conservation are also present and could include the eastern box turtle, Folwer's toad, and gray catbird. The Tiger Spiketail, is a rare dragonfly that was reported in Bergen County in the past, but may no longer be present.

As noted on [Figure 25](#), the majority of these critical wetland habitat areas are located in the southern section of the Borough within the Franklin Swamp, which is owned and preserved by the Borough, and near Franklin Lake. Appropriate stewardship of these areas is important to ensure the long-term survival of these rare species. Additional critical wetland habitat is located in the northwest section by the County Saddle Ridge parkland.

<b>Table 23: Wetland Critical Habitat, NJDEP Landscape Project</b>		
<b>Landscape Wetlands</b>	<b>NJDEP Designation</b>	<b>Acres</b>
	Suitable Habitat	354.99
	State Threatened or Endangered Species	103.35

### 3.26 Landscape Critical Forest Habitat

The NJDEP LU/LC data describes upland forests as upland areas covered by woody vegetation, which can consist of mature tree stands of deciduous and coniferous trees, as well as a mixture of scrub/shrub and brush areas. Also included in this category are early stage forest successional stands, commonly referred to as old fields, which are included because of their potential development into forests. Upland forests by definition do not include wetland forests types or swamps. The Forest data set depicts critical area maps for forest dependent species. The resulting data layer identifies, delineates and ranks habitat statewide based upon sightings of priority, state threatened, state endangered and federally listed species reported present in these habitats.

Forested lands are valued for aesthetic, recreational, ecological, and economic value. From an ecological perspective, forests are important because they provide rich habitat for indigenous and migratory wildlife including mammals, birds, and herptiles. Common wildlife utilizing forests in New Jersey include White-Tailed Deer (*Odocoileus virginianus*), Black Bear (*Ursus americanus*), Red Fox (*Vulpes vulpes*), Wild Turkey (*Meleagris gallopavo*), migratory Warblers (Parulidae), and Timber Rattlesnake (*Crotalus horridus*).

Forests also contain a diverse plant assemblage composed of various subgroups based on height or strata. The upland forest community of Bergen County is typically composed of various Oaks (*Quercus* sp.), Maples (*Acer* sp.), Hickory (*Carya* sp.), Beech (*Fagus grandifolia*), Eastern Red Cedar (*Juniperus virginiana*), and Eastern Hemlock (*Tsuga canadensis*). Forests contribute to area hydrology by increasing infiltration rates of precipitation into groundwater and minimizing sheet erosion due to runoff. Forests remain economically valuable because of recreational uses including hiking, bird watching, as well as timber production and hunting. Shrub and understory layers of forests in New Jersey have been reduced and degraded through over-browsing by deer, and the subsequent spread of non-native invasive plant species.

#### **Critical Forest Wildlife Habitat**

A map of the critical wildlife habitat present within the Borough forests is presented in [Figure 26](#). This figure was created from the NJDEP GIS datalayers for forests and the NJDEP Landscape Project Data for forest habitats.

Extensive acres of forest habitats are present in the Borough, including approximately 1,230 areas (Table 24). Based on the NJDEP Landscape Project Data, the approximately 403 acres of these forests provide critical habitat for State Threatened and Endangered species, and species of concern that could include: bobcat, barred owl, red-shoulder hawk, timber rattlesnake, and marbled salamander. A complete list of Regionally Important Wildlife in the Northern Piedmont Plains utilizing forest habitats is provided in Appendix F.

As noted on [Figure 26](#), the majority of these critical forest habitat areas are located along the steep slopes in the southern section of the Borough, which have not been preserved. Additional critical forest habitat is located in the northwest section within the Bergen County Saddle Ridge parkland, and within the residential developments in this area. The Borough may have conservation easements for some of these forested habitats. Appropriate stewardship of these areas is important to ensure the long-term survival of these rare species.

<b>Table 24: Critical Forest Wildlife Habitat, NJDEP Landscape Project</b>	
<b>NJDEP Landscape Forest Designations</b>	<b>Acres</b>
Species of Priority Concern	4.19
State Threatened Species	2.26
State Endangered Species	396.95
	<b>403.41</b>

### **Forest Fragmentation**

The Highlands RMP explains that protecting the integrity of Highlands Region forests is dependent on the maintenance of large contiguous forested areas and healthy forest stands. Large contiguous forest tracts have a higher degree of interior, or core forest that provides important ecological habitats and functions. Core forest habitat is defined as a forest located more than 300 feet from altered land or a road. As forests become fragmented into smaller patches, many species become vulnerable to greater competition for food and habitat, and to increased predation and reduced mobility. Increased forest fragmentation also results in greater “edge areas” which often increases deer abundance and the spread of invasive non-native plant and pest species. In 2002, the average size of a woodland lot under a single ownership was 10-20 acres, which presents a significant challenge in efforts to sustain large contiguous forests.

### **Community Forest Plan**

The Highlands Regional Master Plan and the NJDEP encourages communities to create *Community Forest Plans* to assist in forest stewardship policies, and the NJDEP provides funding to communities to create these plans. In August of 2006 the Borough hired a Certified Arborist to coordinate the activities of the Shade Tree Commission Program, and develop a Community Forest Plan. The Plan outlined responsibilities and necessary coordination needed among the Shade Tree Commission, the Department of Public Works and Board Officials for recreation, planning and the Environmental Commission. The Community Forest Plan primarily focused on the following actions: ongoing training needs, establishing a budget, identifying hazard trees in parklands, reviewing local ordinances, and street tree plantings. Of particular importance is the Borough ordinance that requires a permit for removing trees greater than 8 inches in diameter.

Conducting a forest inventory is proposed in the plan, and the mapping provided in this ERI should be shared with the Shade Tree Commission to advance this objective.

Specifically, the maps for parklands, forested areas, wetlands, vernal pools and the critical habitats in forests and wetlands can be utilized by the Shade Tree Commission to prioritize areas for the inventory. The Forest Inventory of the 1,200 remaining forested acres could identify dominant forest species that characterize specific parks or parcels and the wildlife habitat. A list of trees and shrubs native to Hunterdon County is provided in Attachment X which should be similar for the Borough, and may assist in this effort. Future amendments to the Community Forest Plan should also address local impacts from deer over-browsing and invasive species management. The report should also address stewardship for the 464 acres of forested wetland habitats in the community.

The 1974 ERI included a detailed inventory of the flora and fauna on several parcels, including the dominant forest type and wildlife habitats on these parcels. This data should be referenced and incorporated for any proposed forest inventory. In addition, Pond Brook and Hohokus Brook were sampled in 1974, and most of the data indicated good water quality within the state standards for nutrients dissolved oxygen.

A good reference in developing a Community Forest Plans includes the "*Building Greener Communities: Planning for Woodland Conservation*," publication sponsored by the Hunterdon County in 2003.

<http://www.co.hunterdon.nj.us/planning/publications/woodland.htm>

### 3.27 Environmental Sensitive Lands

A composite of various environmental GIS data layers was completed for the Borough to identify Environmental Sensitive Lands that may be restricted from future development or disturbances by various regulatory programs. (Figure 27) Resources located within these areas are especially vulnerable to land disturbance and development activities, and from nonpoint source pollutants.

This map was created in order to assist the Borough with the updates to its Master Plan, zoning maps, and amendments to land use policies and ordinances that guide future land use decisions. The following GIS data layers were incorporated into the map of Environmental Sensitive Lands to identify lands where environmental features and critical habitat areas may constrain future development or may be considered for preservation as open space:

- NJDEP identified wetlands
- 100 year floodplains
- Steep slopes greater than 15%
- Preserve open space
- NJDEP documented Critical Wildlife Habitat areas for federal and state listed threatened and endangered species
- Wellhead protection areas

State regulations or local ordinances restrict development and disturbances within areas designated as wetlands, floodplains, riparian zones, and steep slopes. However, the Borough may wish to consider adopting an ordinance to protect the wellhead protection areas, and incorporate goals and objectives that restrict disturbances of critical wildlife habitat. It should also be noted that the water supply well head protection areas as depicted on Figure 27 cover significant portions of the Borough, and future development could impact the quality and recharge of these critical water supplies. Acquisition of undeveloped lands near the water supply wells as open space could be considered and prioritized.

### 3.28 History and Preservation Of Historic Sites

The identification and preservation of historical sites is important in maintaining the cultural legacy of a community. The Borough was settled around 1700, and it became incorporated in 1922. Detailed reports of historic landmarks were documented in the Borough Historic Inventory Reports originally created in 1984 and significantly updated in 1999. The report recommended that the Borough consider adopting a Historic District and land use regulations to protect these features. However, this action has not occurred, likely because these historic landmarks are spread throughout the community. The listing of historic sites in the Borough is provided in Appendix A and can be viewed at the County website.

[http://www.co.bergen.nj.us/planning/os/hp\\_NJRegisterListings.pdf](http://www.co.bergen.nj.us/planning/os/hp_NJRegisterListings.pdf)

According to the information published by Bergen County, 44 of the 70 communities in the County have designated Historic Districts. Bergen County offers matching grants for the acquisition, stabilization, rehabilitation, restoration, preservation, and preparation of plans and reports for capital historic preservation projects. Municipalities and qualified non-profit organizations are eligible for the competitive grants from the County and the State. Eligible properties for grant-funded activities must be listed on or eligible for listing on the New Jersey Register of Historic Places, either individually or as a contributing part of a historic district. The County staff could be helpful in determining appropriate action for the Borough regarding the designation of a historic district.

In 2002 the New Jersey Historic Preservation Office (HPO) published a report entitled, *New Jersey Partners for Preservation Plan, 2002-2007*. Based on survey results the plan reported that, "New Jersey citizens care deeply about the places, cultures and traditions that make up New Jersey's past. They are alarmed by the loss of farmland and open space around the state, the villages being overwhelmed by sprawl, and the historic resources being demolished to make way for new development." The survey reported that, "New Jersey citizens value the preservation of historic houses, main streets, neighborhoods, farms and industrial sites that give New Jersey communities their distinctive character and identity. They value archaeological sites for what they teach about the past. They value stories about people and events and want these stories preserved, interpreted and passed down. Perhaps most important, participants in the survey said they value historic preservation for what it contributes to their quality of life." (New Jersey Partners for Preservation Plan, NJDEP 2002-2007).

The *New Jersey Partners for Preservation Plan* reported that, "Historic Preservation is about saving the buildings, neighborhoods, and landscapes that give New Jersey its special character. It is about conserving the state's natural resources by investing in existing communities." The Preservation Plan also reports that, "small towns and cities participating in the *Main Street New Jersey Program*, have seen over \$190 million in physical reinvestment and a net gain of 3,000 jobs through preservation based economic development. In summary, preserving historic landmarks and historic districts provides a distinct character and sense of place within communities, and a renowned quality that is supported by local residents and businesses.

[http://www.state.nj.us/dep/hpo/4sustain/njhpp2002\\_low.pdf](http://www.state.nj.us/dep/hpo/4sustain/njhpp2002_low.pdf)

### **Early Inhabitants of Bergen County**

Information provided by the Hunterdon County Cultural and Heritage Commission was reviewed to provide the historic background for this report. Small bands of paleo-Indians, or pre-historic people, lived in New Jersey during the Ice Age. They lived by fishing and hunting mammoths, mastodons, saber-tooth tigers, caribou, musk oxen, wild pigs, deer and bears. Spear points and ax heads have been found throughout central New Jersey that experts have dated to 10,000 years old.

The later generations were known as the Leni Lenape people. The word "Lenape" has been described as: *a male of our kind, men of the same nation or common, ordinary, real people*. The land occupied by the Lenape, included all of New Jersey, southern New York, eastern Pennsylvania, and northern Delaware, and was called "Lenapehoking." The Lenape clans were an agricultural society and farmed maize, beans and gourds, and supplemented their livelihood with hunting and fishing. From the Musconetcong River, which separates Hunterdon and Warren Counties, north into southern New York State, lived the Munsee, also called the Minsi. South of the land of the Munsee were the Unami. This name means *person from down river*, which refers to the Raritan or the Delaware. The Unami lived south of the hills of northern Hunterdon County where farming was more integral part of their livelihood. A tribe of the Lenape Indians living in central New Jersey was called *Raritaing*, from which the name "Raritan" was derived. The European explorers in the 1600s described the Lenape as tall with black hair and eyes. The men had no beards, and their hair was sometimes braided on one side of the head, while the hair was plucked out on the other side. Another popular style was to pluck out the hair on the sides of the head, leaving only a strip along the top and back.

The Province of New Jersey was part of the Dutch New Netherlands colony until the English conquest in 1664. The early settlers farmed, fished, hunted, trapped beaver and muskrats, logged, or were merchants.

### **Historic Preservation Resources**

Preserving historic landmarks requires dedication, creativity and determination from interested citizens and local officials. The process can be difficult to understand and lengthy, but there are resources that can help with the process including the following key website resources. The New Jersey State Historic Preservation Office (HPO), County, National Park Service and Preservation New Jersey work with property owners, residents, and state, county, and municipal representatives to help preserve historic sites, landmarks and cultural landscapes. The New Jersey State Historic Preservation Office maintains records for eligible and listed historic properties and posts updates on new register properties regularly on their website. The websites for these organizations offer various resources to help communities with these processes including: organizing a local historic commission, developing ordinances to ensure the preservation of these landmarks, surveying historic sites, adopting historic districts and detailed brochures on

restoration concerns and techniques. Additional information regarding Historic Preservation can be obtained from the following websites.

New Jersey Historic Preservation Office

<http://www.nj.gov/dep/hpo/>

New Jersey Historic Trust

<http://njht.org/>

County Planning Department

[http://www.co.bergen.nj.us/planning/os/hp\\_NJRegisterListings.pdf](http://www.co.bergen.nj.us/planning/os/hp_NJRegisterListings.pdf)

Preservation New Jersey, a non-profit organization

<http://www.preservationnj.org>

US National Park Service

<http://www.nps.gov/history/hps/tps/briefs/presbhom.htm>