

BANISCH ASSOCIATES, INC.

111 Main St., Flemington, NJ 08822

(T) 908.782.0835 / (F) 908.782.7636

chuckmcgroarty@banisch.com

Memorandum

To: West Milford Planning Board

From: Chuck McGroarty, PP, AICP

Date: August 31, 2009

Re: Highlands: Model Highlands Element for Municipal Master Plans

During the discussion of the Highlands Draft Master Plan Element at the Planning Board meeting of August 27, Mr. Siesta inquired about definitions for the maps attached to the document. These maps or Exhibits as referenced in the draft Master Plan Element correspond to the text although, as many of them were taken from other Highlands documents in the interest of time, titles and exhibit designations will require modification to be consistent with the text.

Per Mr. Siesta's suggestion, this memo provides a brief explanation for each of the 32 maps in question. Definitions from the Highlands Regional Master Plan (RMP) are used wherever possible; excerpts from the RMP, the West Milford Build-Out Report and various Highlands Technical Reports are also used as necessary.

This exercise brought to my attention the need to replace two of the maps in the previous distribution and to eliminate another one altogether, as noted herein. I will distribute the revised maps at the Planning Board meeting on Thursday.

c: Mayor Bettina Bier
Tonya Cubby, Planning Board Secretary
Dorrie Fox, Land Use Administrator
Tom Germinario, Esq.
Paul Ferriero, P.E.

Exhibits

TOWNSHIP HIGHLANDS AREA

The first map shows the Township entirely within the Preservation Area

The second map depicts the various overlay zones i.e. Existing Community; Lake Community and the largest overlay zone, the Protection Zone

TOWNSHIP LAND USE INVENTORY

No map for this category at this time.

HIGHLANDS CONTAMINATED SITES INVENTORY – TIER 1 SITES

HIGHLANDS CONTAMINATED SITES INVENTORY – TIER 2 SITES

The third map combines both Tier 1 and Tier 2 sites and is entitled *Highlands Contaminated Site Inventory*. (Note: Please substitute the attached map for the version provided with the draft report previously districted to the Board which is entitled Resource Analysis – Known Contaminated Sites). Tiers 1 and 2 are defined in Appendix ‘N’ of the Highlands Technical Report entitled *Regional Land Use Conditions and Smart Design – 2008* as follows:

Tier 1 consists of:

- All Final and Deleted Superfund sites;
- All Resource Conservation and Recovery Act (RCRA) identified sites;
- All sites with a Remedial Level of C3 or D (NJDEP Known Contaminated Sites in New Jersey (KCS-NJ));
- Remaining sites with a Remedial Level of C2 located in the Planning Area (KCS-NJ)

Tier 2 consists of:

- Remaining sites with a Remedial Level of C2 located in the Planning Area (CKS-NJ)

FOREST RESOURCE AREA

The fourth map shows that all the forested areas within West Milford are classified as “high ecological value forest” explained by the RMP as:

- Means areas that include high ecological value forest areas including those forested areas that exhibit the least fragmentation and are vital for the maintenance of ecological processes. (RMP, Glossary)
- The Highlands Council spatially delineated the Forest Resource Area by including those forested areas that express one or more of the following indicators: a contiguous forest patch of equal to or greater than 500 acres in size; an area consisting of greater than 250 acres of core forest area greater than 300 feet from an altered edge, or areas that include greater than 45 percent of mean total forest cover and mean distance to the nearest patch (HUC14 subwatershed only). (RMP, pages 55; 58)

TOTAL FOREST AREA

The fifth map shows the forested land cover in the Township.

FOREST SUBWATERSHEDS

The sixth map entitled *Forest Integrity by HUC14 Subwatershed* indicates that the forested areas in West Milford to have a “High” classification which is further described by the RMP as follows:

- In addition, the Highlands Council assessed forest cover integrity in the Highlands Region at the subwatershed level. Forests are essential for the protection of water quality and quantity. To assess forest cover integrity at a subwatershed level, the Highlands Council assigned a value class to each of the 183 HUC14 subwatersheds in the Highlands Region based on the following classes for the Highlands subwatersheds:
 - High Integrity Forest Subwatershed – A sub-watershed that is predominantly forested, including a high proportion of forest cover consisting of high core area, large patch size, and a low distance to nearest patch;
 - Moderate Integrity Forest Subwatershed – A sub-watershed that is predominantly forested, but does not exhibit a high proportion of forest cover, core area or patch size and an increase in distance to nearest patch; and
 - Low Integrity Forest Subwatershed – A subwatershed that is predominantly non-forested or includes low values for proportion of forest cover and patch size, or a high distance to nearest patch. (RMP, page 58)

Note: A HUC14 is defined as:

- HUC14 Subwatershed - Means a delineated area within which water drains to a particular receiving surface water body (e.g., a watershed), which is identified by a 14 digit number, or Hydrologic Unit Code (HUC). The HUCs were developed by the USGS. In the Regional Master Plan (RMP), the term HUC14 correlates to a subwatershed. A subwatershed is a subdrainage area within a watershed. The only difference between watershed and subwatershed is scale. (RMP, Glossary)

HIGHLANDS OPEN WATERS

The seventh map shows all surface water bodies in the Township. The RMP defines this category as:

- Means all springs, wetlands, intermittent and ephemeral streams, perennial streams and bodies of surface water, whether natural or artificial, located wholly or partially within the boundaries of the Highlands Region, but shall not mean swimming pools. (RMP, Glossary)

HIGHLANDS RIPARIAN AREAS

The eighth map depicts riparian areas in the Township which are described by the RMP as follows:

- Riparian Areas are areas adjacent to, and hydrologically interconnected with, rivers and streams. They are areas that exhibit periodic inundation or saturation of soils, are subject to periodic flooding, and include wildlife corridors within 300 feet of a surface water feature. Riparian Areas serve as an interface between surface water bodies and terrestrial ecosystems and play a critical role in maintaining the quality and ecological integrity of Highlands Open Waters. Since Riparian Areas are directly related to the protection requirements of Highlands Open Waters, these two resources are presented together in the Regional Master Plan. (RMP, page 58)

WATERSHED VALUES

The ninth map indicates all HUC14 subwatersheds in West Milford (there are 14 in total) fall within the “High” category which is described in the RMP as follows:

- The Highlands Council assigned a watershed value class to each HUC14 subwatershed in the Highlands Region based on a cumulative assessment of all the watershed indicators. The Council created the following watershed value classes for the Highlands subwatersheds:
- High Resource Value Watershed – A high resource value watershed contains predominantly forest lands and includes a significant portion of the watershed that is high quality habitat. A high value watershed typically consists of limited pre-existing developed land within the watershed; (RMP, page 61)

RIPARIAN INTEGRITY

The tenth map shows that all riparian areas within the Township are rated “High” which is described as follows:

- The integrity of Riparian Areas may be defined by that area’s ability to provide water protection and ecological function, including nutrient and sediment filtration, stream bank stabilization, wildlife migration corridors and habitat, stormwater and flood water storage, and stream water quality protection (NJWSA 2000). Characterizing Riparian Area integrity entailed the examination of existing land use conditions within Riparian Areas, or those lands that are proximate to a surface water feature. The evaluation of Riparian Area integrity was expressed at the HUC14 subwatershed level.
- High Integrity Riparian Area – These areas include subwatersheds with Riparian Areas that exhibit predominantly natural vegetation, including high quality habitat

for water/wetland dependent species, and a generally low incidence of impervious area, agricultural uses, and/or road crossings; (RMP, page 63)

STEEP SLOPE PROTECTION AREAS

Although difficult to read at this scale, the map shows the Township to have significant amounts of terrain classified as “moderate” and “steep”. The RMP identifies several variations that constitute “steep slope protection areas” as follows:

- The Council examined areas of slope in the Highlands Region that encompassed a minimum of 5,000 square feet and that exhibited one of the following grade classifications and these grades were established as steep slope protection areas:
 - Grades of slopes of 20 percent or greater;
 - Grades of slope between 15 percent and 20 percent; and
 - Grades of slope between 10 percent and 15 percent that occur within the Riparian Area.
- For slopes that exhibited grades between 10 percent and 15 percent, the Highlands Council differentiated between those within and outside Riparian Areas. Alteration of slopes of 10 percent or greater within a Riparian Area have a greater potential of impacting adjacent water bodies through soil erosion (thereby causing degradation of surface water quality, silting of wetlands, and alteration of drainage patterns). Thus, in order to meet the protection needs of Highlands Open Waters, slopes with a grade of 10 percent or greater in the Riparian Area were identified and mapped as steep slope protection areas. (Emphasis added.) (RMP, page 65)

To understand the distinction between the classifications, it is helpful to see the policy statements in the RMP intended to guide future land use controls. These are as follows:

- Policy 1E2: All lands with slopes of 20% or greater and lands within Riparian Areas with slopes of 10% and greater shall be considered as Severely Constrained Slopes.
- Policy 1E3: All non-Riparian Area lands having a slope of 15% to less than 20% which are forested shall be considered Moderately Constrained Slopes.
- Policy 1E4: All non-Riparian Area lands having a slope of 15% to less than 20% which are non-forested with one or more of the following characteristics shall be considered Constrained Slopes: a) highly susceptible to erosion; b) shallow depth to bedrock; or c) a Soil Capability Class indicative of wet or stony soils.
- Policy 1E5: All non-Riparian Area lands having a slope of 15% to less than 20%, which are non-forested, are not highly susceptible to erosion, and do not have a

shallow depth to bedrock or a Soil Capability Class indicative of wet or stony soils, shall be considered Limited Constrained Slopes.

- Policy 1E6: To require through local development review and Highlands Project Review that applications for development include topographic information identifying the location of any Steep Slope Protection Areas located on the parcel proposed for development.
- Policy 1E7: To require through local development review and Highlands Project Review that applications for development involving parcels of land with slopes of 10% or greater include identification of forested lands, areas which are highly susceptible to erosion, depth to bedrock, and Soil Capability Classes.
- Policy 1E8: To prohibit through local development review and Highlands Project Review land disturbance within areas which are Severely Constrained Slopes and Moderately Constrained Slopes, except for linear development in both the Preservation and Planning Areas that meets the requirements of N.J.A.C. 7:38-3.8(c)1-4.
- Policy 1E9: To require through local development review and Highlands Project Review the use of Low Impact Best Development Practices for any land disturbance or human development within areas which are Constrained or Limited Constrained Slopes, or that involves an approved disturbance of a Severely Constrained or Moderately Constrained Slope.
- Policy 1E10: To require that conforming municipalities and counties implement the steep slope protection provisions of Policies 1E2 through 1E9 through master plans and development regulations. (RMP, page 147)

Because West Milford is entirely within the Preservation Area, slope disturbance is regulated by the standards set forth in N.J.A.C. 7:38-3.8(c) which also provides the following definition in N.J.A.C. 7:38-1.4:

- “Steep slope” means a land area with a grade greater than 10% and includes but is not limited to natural swales, ravines and manmade areas such as those created for road grading or mining for sand, gravel or fill.

CRITICAL WILDLIFE HABITAT

- Means habitats for rare, threatened or endangered wildlife species as identified through the Landscape Project of the New Jersey Department of Environmental Protection (NJDEP). (RMP Glossary)

SIGNIFICANT NATURAL AREAS

-
- Significant Natural Areas represent the presence of rare or endangered plant species or exemplary ecological communities. These sites include some of the best remaining habitat for rare plant species and regionally-significant ecological communities within the Highlands Region. The destruction or degradation of these sites could result in the loss of unique components of our natural heritage. The Highlands Council worked in cooperation with the NJDEP Natural Heritage Program to identify Natural Heritage Priority Sites that are appropriate for inclusion as Significant Natural Areas within the Highlands Region. (RMP page 68)

VERNAL POOLS

This map depicts the locations of vernal pools and the required 1000 foot buffer for each. The RMP describes vernal pools as follows:

- Vernal pools are unique ecosystems that
 - Provide critical breeding habitat for a variety of amphibian and invertebrate species;
 - Contribute significantly to local biodiversity by supporting plants, animals and invertebrates that would otherwise not occur in the landscape; and
 - Contribute significant amounts of food to adjacent habitats. (RMP, page 68)

CARBONATE ROCK AREAS

As indicated on this map West Milford has a single relatively thin vein of carbonate rock formation. Carbonate rock or karst topography is described in the RMP as follows:

- The term karst describes a distinctive topography that indicates dissolution of underlying carbonate rocks (such as limestone and dolomite) by surface water or ground water over time. This dissolution process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams and sinkholes direct surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. Stormwater basins, septic system leaching fields, sewers, agricultural runoff, lawn runoff, underground pipelines, and soil disturbance may also contribute contaminants directly to ground water through karst features. In addition to ground water concerns, communities in karst areas must contend with safety concerns as sinkholes can have damaging effects to large manmade objects. (RMP, page 74)

LAKE MANAGEMENT AREA

The Lake Management Area sets forth the policies that will apply to the Lake Community, a subset of the Existing Community Zone.

- Lake management areas have been defined that include four tiers:
 - A Shoreland Protection Tier consisting of an area measured 300 feet or the first public road perpendicular to the shoreline of the lake;
 - A Water Quality Management Tier consisting of an area measured 1,000 feet perpendicular from the shoreline of the lake, including the Shoreland Protection Tier;
 - A Scenic Resources Tier consisting of an area measured 300 to 1,000 feet perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, and topography of the land area, with wider portions of lakes and greater topographic relief having longer view distances; and
 - A Lake Watershed Tier consisting of the entire land area draining to the lake. (RMP, pages 76; 78)

Note: the Lake Community Sub-Zone is defined as follows:

- Means those areas identified on the Land Use Capability Zone Map within the Existing Community Zone that are within 1,000 feet of lakes that are ten acres or greater in size. This sub-zone has unique policies to prevent degradation of water quality, harm to lake ecosystems, and natural aesthetic values. (RMP Glossary)

NET WATER AVAILABILITY

- Means the value resulting from subtracting the impacts of consumptive and depletive surface and ground water uses from ground water availability. (RMP Glossary)

This calls for some additional definitions:

- Consumptive Water Use: Means water that is evaporated, transpired, incorporated into products or crops, consumed by humans or animals or otherwise removed from a watershed or subwatershed other than by conveyances as potable water or wastewater.
- Depletive Water Use: Means water which is withdrawn from a HUC14 subwatershed and transported outside of the subwatershed (through utility conveyances as potable water or wastewater), resulting in a net loss of water to the subwatershed from which the water originated.

-
- Ground Water Availability: Means the rate of ground water use that can occur in an area without contravening the goals and objectives of the Highlands Act. It is that portion of the ground water capacity of a HUC14 subwatershed that can be provided for human use without harm to other ground water users, aquatic ecosystems or downstream users. (RMP Glossary)

PRIME GROUND WATER RECHARGE AREAS

- Means lands with the best ground water recharge rates within a HUC14 subwatershed, as indicated by GSR-32 analysis, that provide forty percent (40%) of the total recharge volume for the subwatershed. (RMP Glossary)

HUC 14s ON NJDEP IMPAIRED WATERS LIST

- The NJDEP's Surface Water Quality Standards (SWQSs) establish the designated uses and specify the water quality criteria necessary to achieve these uses and protect the State's waters. The two common designated uses for impaired surface waters in the Highlands Region are primary contact recreation due to unacceptable sanitary quality (91 percent of assessed water body units do not support primary contact use), and aquatic life support (65 percent of assessed water bodies do not support the use). The most common water quality parameters in violation of the State's SWQSs are bacteria, temperature, and phosphorus, in descending order. (RMP, page 82) (Emphasis added.)
- ...as a result of the water quality assessment, many streams and lakes within the Highlands Region are designated as being impaired for water quality, with most impairment related to fecal coliform bacteria, phosphorus, and temperature. Some stream segments were designated as impaired due to arsenic concentrations. (RMP, page 82)

WELLHEAD PROTECTION AREAS

- A WHPA has three tiers which serve to mark the boundaries for priority areas for the protection of ground water quality.
 - Tier 1 is a two-year time of travel, (e.g., the groundwater within this tier flows to the well within a two-year time period)
 - Tier 2 is equivalent to a five-year time of travel, while
 - Tier 3 is equivalent to a twelve-year time of travel
 - (Tier 3 also includes the land area within Tiers 2 and 1, and Tier 2 also includes the land area within Tier 1). (RMP, pages 84; 86)

PUBLIC COMMUNITY WATER SYSTEMS MAP

- Highlands Public Community Water Supply Systems: Means public water supply systems in the Highlands Region that pipe water for human consumption to at least either 15 service connections or one that regularly serves at least 25 year-round residents. (RMP Glossary)
- The public water supply wells are grouped into two categories based on the type of water supply system they support. Public community water supply systems have at least 15 service connections used by year-round residents, or regularly serve at least 25 year-round residents. An example is a municipal system that services single-family residential homes. A public non-community water system is a public water system used by individuals other than year-round residents, such as hospitals or restaurants, for at least sixty days of the year. (RMP, page 86)

HIGHLANDS DOMESTIC SEWERAGE FACILITIES MAP

- Highlands Domestic Sewerage Facilities: Means wastewater treatment works that provide wastewater treatment primarily of sanitary sewage rather than industrial wastewater as a public utility and may include service areas and treatment capacities sufficient to support redevelopment and regional growth opportunities. (RMP Glossary)
- The primary wastewater collection systems in the Highlands Region predominantly treat residential wastewater. A Highlands Domestic Sewerage Facility, which includes publicly-owned and investor-owned domestic wastewater treatment facilities, provides wastewater treatment to municipalities and has collection systems that can support redevelopment and regional growth opportunities. These facilities generally have the NJDEP-permitted discharge capacity of more than either 0.150 million gallons per day (MGD) for discharge to surface water or 0.075 MGD for discharge to ground water. (RMP, page 88)

SEPTIC SYSTEM YIELD MAP

Note: Please disregard the map entitled *Municipal Build-out Report Septic System Yield by HUC14 and LUCM Zone*. Because the entire Township is located within the Preservation Area, NJDEP standards will apply i.e. one unit per 88 acres for forested lands; one unit per 25 acres for non-forested lands. Instead, please see the summary results, below, as presented in the report generated from the build-out analysis that comprised Modules 1 and 2. The report, entitled *West Milford Township Municipal Build-Out Report, July 2009* states on page 5:

- West Milford Township is one of five municipalities located entirely within the Preservation Area. The RMP build-out analysis for West Milford Township estimates the following new development results for potential developable lands for the entire municipality, which are discussed in detail in the following section and summarized in Table 4:

- Development in Wastewater Utility Service Areas: 0 residential dwelling units and 0 square feet of non-residential development, resulting in a wastewater demand of 0 gallons per day (gpd), or 0million gallons per day (MGD), and estimated public water supply demands of 0 gpd, or 0 MGD.
- Development in Septic System Areas: 19 septic systems in the Preservation Area. The build-out results based on potential developable lands are not constrained by water supply utility capacity and wastewater utility capacity. The water supply demands from the build-out are not constrained by water availability. (Emphasis added.)

HIGHLANDS ROADWAY NETWORK

This map depicts Rt. 23 along the Township's southern boundary and County roads that traverse the Township. The following passage from the RMP may be of some interest particularly in regard to the County roads and the corridor improvement program:

- The Regional Master Plan also encourages context sensitive design as a strategy based on designing and planning projects in close collaboration with communities and stakeholders. This strategy encourages transportation officials to work with local stakeholders in order to design projects to reflect the people who live, work and travel in a certain area. This process of engaging communities can result in more improved transportation solutions which better address a particular community's transportation needs. (RMP, page 101)

HIGHLANDS TRANSIT NETWORK

This map depicts the bus line routes, bus stations and the airport within West Milford.

PRESERVED LANDS

Note: Please substitute the attached map entitled *Conservation Easement / Preserved Lands* for the version provided with the draft report previously districted to the Board which is entitled *Resource Analysis – Preserved Lands*.

HIGHLANDS CONSERVATION PRIORITY AREAS

This map indicates numerous locations identified as both “Moderate” and “High” for acquisition as Conservation Priority Areas. The RMP describes the criteria for such selection as follows:

- In order to determine high priority areas in the Highlands Region for preservation, the Council used the results of the Resource Assessment to identify and prioritize those lands within the Highlands Region which have the highest water and ecological resource values. These values are based on a combination of indicators using methodologies discussed elsewhere in the RMP which measure the quantity

and quality of regional resources such as: watershed conditions, Highlands Open Waters, Riparian Areas, prime ground water recharge areas, forests, Critical Habitat, and steep slopes. Moreover, existing protected lands, showing the historic pattern of land preservation activities in the Region, will be identified and integrated with the ecological resource value to identify priority areas for conservation. This prioritization process will enable the Council to identify a confidential inventory of open space lands and farmland within the Conservation Priority Area and the Agricultural Priority Area and a Special Environmental Zone in the Preservation Area to respond to Section 12.a of the Highlands Act, which are areas that should not be developed due to their importance for water resource and ecological protection. (RMP, page 230) (Emphasis added.)

HIGHLANDS SPECIAL ENVIRONMENTAL ZONE

- Means an area in the Highlands Region which should not be developed in order to protect water resources and environmentally sensitive lands based upon RMP Conservation Priority Area rank, and the potential to a) protect water supply reservoirs and other critical water features, b) create large contiguous areas of environmentally sensitive lands, c) create habitat corridors, and d) connect existing preserved open space. Existing land use patterns shall be considered to minimize conflicts between the designation of a Special Environmental Zone and ongoing land uses. (RMP Glossary)

PRESERVED FARMS, SADC EASEMENTS, ALL AGRICULTURAL USES

This map indicates certain locations within West Milford engaged in an agricultural use. There are no SADC (State Agriculture Development Committee) easements in the Township.

IMPORTANT FARMLAND SOILS

The following excerpt from a Highlands' Technical Report entitled *Sustainable Agriculture 2008* can assist in understanding the classifications on this map:

- The primary factor used in determining important farmland is soil quality, which is measured based on land capability classes, important farmland classes, and soil productivity rating.

Soil data are prepared by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) and are used as the reference to identify soil quality. The four soil types that are considered Important Farmland Soils are Prime, Statewide Importance, Unique, and Locally Important soils. Usually a percentage figure for each of these four soil categories is calculated for the entire farm targeted for preservation.

Prime farmland soil has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce high yields of crops when treated and managed according to acceptable farming methods. Prime farmland soils are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

Farmland of Statewide Importance soils are similar to Prime farmland soils and produce high yields of crops when treated and managed according to acceptable farming methods. This soil may support yields as high as Prime farmland if conditions are favorable. Farmland of Locally Important soils include those soils that are not Prime or Statewide Importance and are used for the production of high value food, fiber, or horticultural crops.

Unique farmland soils are soils used for special crops (such as cranberries in the New Jersey Pinelands). Unique soils are determined on a statewide basis by the State Soil Conservation Committee. Locally Important soils are generally defined through county ranking processes, rather than by the NRCS. (Emphasis added, pages 6-7)

HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCE INVENTORY

- Highlands Historic and Cultural Resource Inventory: Means the listing of historic, archaeological and cultural resources within the Highlands Region, including but not limited to: 1) all properties listed on the New Jersey or National Register of Historic Places; 2) all properties which have been deemed eligible for listing on the New Jersey or National Register of Historic Places; and 3) all properties for which a formal opinion of the State Historic Preservation Office (SHPO) has been issued. (RMP Glossary)

BASELINE SCENIC RESOURCES INVENTORY

- Highlands Scenic Resource Inventory: Means the inventory of regionally significant lands within the Highlands Region that encompasses elements of high scenic quality worthy of protection, which is developed in coordination with local governments and maintained by the Highlands Council. (RMP Glossary)

SDRP PLANNING AREAS

This final map indicates the various planning area designations assigned to West Milford by the *State Development and Redevelopment Plan*. There are no designated centers within West Milford.