

Appendix F: Open Space Prioritization Process

Introduction

The Wake County Open Space Plan has been developed from four primary sources of information: the Wake County Watershed Management Plan (prepared by CH2M Hill in conjunction with this study), Wake County's Geographic Information System (GIS), identification of natural and human resources from county and state planning agencies, and input from citizens and municipal staff and officials. The maps presented in this chapter have been produced using GIS. GIS is an application-based tool used to analyze spatial data and provide for detailed geographic analysis. The strength of GIS is its ability to overlay separate layers of information and reveal patterns of interrelated landscape features. Once spatial relationships are determined and patterns revealed, decisions can be made and implemented to meet the goals defined.

For the Wake County Open Space Plan, GIS has been used to document existing open space, parks and greenway facilities, municipal boundaries, roads, streams and other pertinent geographical data. The Watershed Management Plan examined 81 watersheds within Wake County for water quality and quantity issues and prioritized resources to define landscapes that are in need of protection. This Open Space Plan has taken 12 of the top 25 prioritized watersheds and conducted additional analysis in order to define the highest priority lands for acquisition. By combining the results of these two studies, along with the completed municipal open space plans, critical open space areas and potential corridors for protection have emerged. The County will complete the evaluation for the remaining 13 top priority watersheds. Additionally, the County will evaluate and prioritize land for each of the 81 watersheds using the methodology outlined within this appendix.

The strength of using GIS to define the future Wake County Open Space system is its ability to combine complex information through a dynamic matrix so that important interrelationships are identified. Additionally, the matrix can evolve as more data is assembled and made available. The benefit of producing the Wake County Open Space Plan in GIS is that the information can easily be reproduced, updated, shared and incorporated immediately for local and county-wide planning strategies. The result of this effort will allow local municipal governments to coordinate future and present open space acquisition and protection efforts.

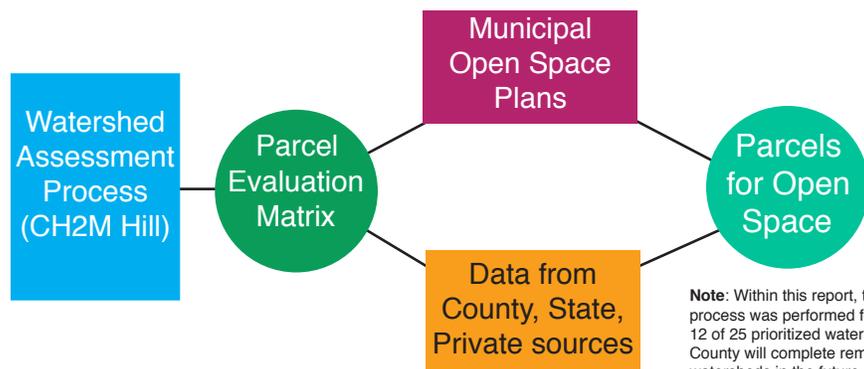
From Watersheds to Parcels

The Watershed Management Plan conducted an assessment of 81 subwatersheds throughout the County to determine the ecological health of the county's streams and rivers. This assessment focused on ecological, cultural, spatial, and temporal elements. In addition to this assessment, each of the twelve municipalities in Wake County formulated individual open space plans. This chapter of the Open Space Plan report combines these separate efforts into one comprehensive approach. The focus of this chapter was to develop a resource list, based on a parcel prioritization process, that identifies key land areas in Wake County (down to the parcel level) suitable for open space acquisition.

The analysis and classification of watersheds was conducted at the macro-level. The watershed assessment methodology by CH2M Hill focused and identified areas for protection and/or restoration activities in which resources should be concentrated. In order to prioritize parcels targeted for open space, a multi-layered, weighted analysis matrix was developed by Greenways Incorporated. This matrix was developed using the existing Geographic Information System (GIS) database provided by Wake County, as well as information obtained from the State of North Carolina and non-profit organizations. In addition, each municipality prioritized other land areas.

Evaluating individual parcels for potential acquisition, using the Parcel Prioritization Methodology, requires a thorough process, based on objective criteria, in order to justify acquisition decisions. This is especially important when prospective open space and conservation land sellers are 'competing' for limited acquisition funds. Furthermore, a Wake County decision to decline an offer or donation of land or easement must also be defensible, based on the best available data for that parcel. Described on the following pages is a summary of the watershed assessment process used by CH2M Hill, the parcel prioritization methodology by Greenways Incorporated, and the municipal-level property evaluation process that have been used to define specific parcels of land to be included within the Wake County Open Space Plan.

Parcel Identification and Prioritization Process



Note: Within this report, this process was performed for the top 12 of 25 prioritized watersheds. County will complete remaining watersheds in the future using this

Watershed Assessment (Macro-level)

All 81 watersheds in Wake County were prioritized by combining multiple GIS layers. Each layer is described below. Each feature within the GIS layer was given a rank between 1 and 5 (1 having the lowest priority and 5 having the highest). For example, within the rare, threatened, or endangered species layer, a threatened species was assigned a value of 4, while an endangered species was assigned a value of 5. The overlapping features of the layers were then summed to give an overall rank by watershed.

The following priority watershed maps were created:

- Human Resources Needs Watersheds – These are watersheds prioritized based on the potential to have an impact on human health within the County. The parameters include areas that contain water supply waters, organized aquatic recreation, groundwater recharge areas, or parkland.
- Natural Resources Needs Watersheds – These are watersheds prioritized based on the potential to have an impact on sensitive aquatic and terrestrial species. The parameters include areas that contain significant natural heritage areas or rare, threatened, or endangered species.

Human Resource Needs

A GIS analysis was performed to rank the relative priority of the County's 81 watersheds from a human resources needs perspective. The following layers were considered when assigning priority to the watersheds:

- water supply watersheds
- recreational waters
- groundwater recharge areas
- parklands

Water Supply Watersheds

At the first Watershed Management Plan Task Force (TF) meeting, it was agreed that water supply watersheds should be given highest priority for protection. Thus, the land area within each watershed classified as water supply was assigned a weighted value of 5, the highest weight assigned to any feature.

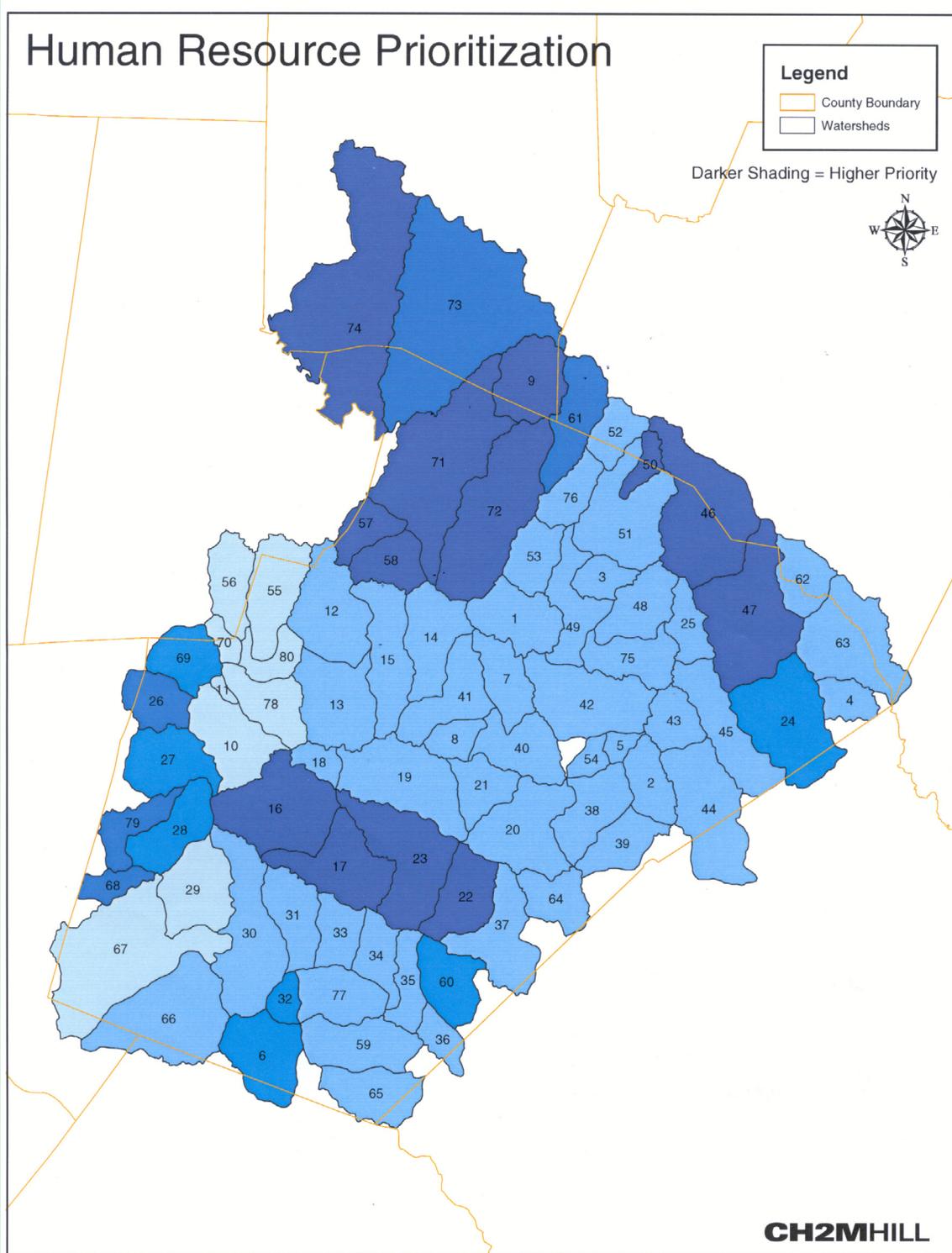
Recreation Waters

A second layer is recreational waters. These waters were identified by two methods. First, waters classified as "B" waters by the North Carolina Division of Water Quality were included. These are waters that can support organized recreation. In addition, streams running through parkland that were not already rated as "B" waters were included. These waters were added because they could be used on a more frequent basis for wading and other activities and should be protected as a human resource need. These two layers were assigned a weighted value of 4 to determine the relative importance of recreation waters in each watershed.

Groundwater Recharge Areas

The Task Force indicated that maintaining an adequate groundwater supply was one of the objectives of the Watershed Management Plan.

Therefore, the entire study area was given a ranked value of 1-5 based on the groundwater recharge rate. A value of 1 was assigned to those areas with low recharge rates while a value of 5 was assigned to those areas with higher recharge rates. The groundwater recharge rates were based on the draft results of a study being done by the Division of Water Quality's Groundwater Section.



Parkland

From a public use perspective, parks need protection since they are utilized for recreation. In addition, parks that have waters running through them may have public support for protection for health issues as well as aesthetics. Since the public health threat is low however, parks were given a lower weighting factor than other human resource needs and were assigned a value of 1.

Overall Human Resource Needs Priorities

The priority values for water supply, recreational waters, groundwater recharge and parkland were summed for each watershed. The watersheds were then normalized by watershed area to allow comparison. Normalized watersheds did not receive a higher priority score simply based on its size. The highest value corresponds to the highest priority from a human resources need standpoint.

Natural Resources Needs

A GIS analysis was performed to rank the relative priority of the County's 81 watersheds from a natural resources needs perspective. Specifically, watersheds with rare, threatened, or endangered species or which contain a significant natural heritage area (sites that contain a biodiverse habitat) were given priority.

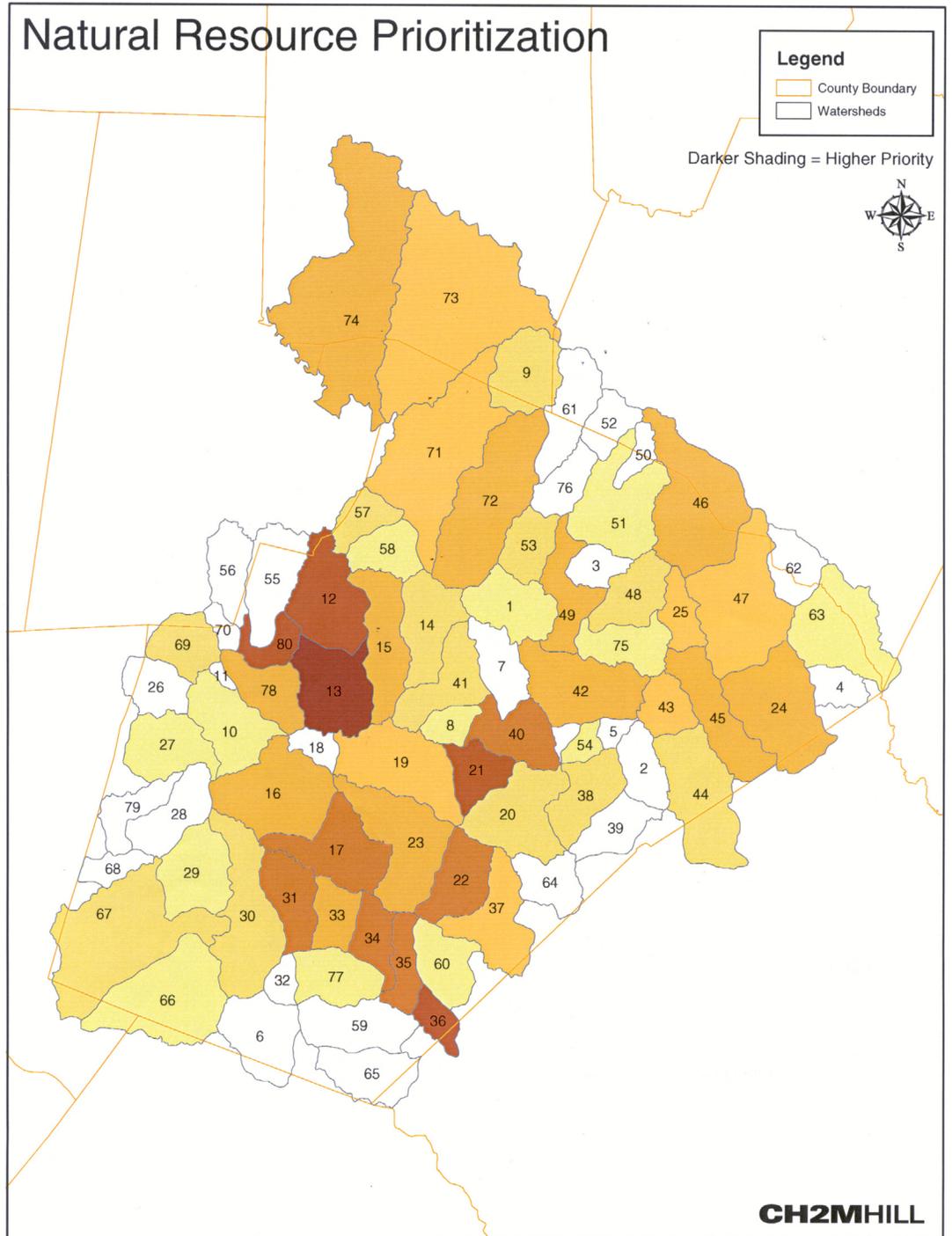
Rare, Threatened, and Endangered Species

The state status (rare, threatened, or endangered) was used to prioritize watersheds. After reviewing the list of rare, threatened, and endangered species within the County, it was determined aquatic and terrestrial species should be assigned an equivalent weight since the majority of the terrestrial species were dependent on good water quality. Their habitats were described as wetlands, streambanks, and lakes. Natural Heritage Program staff (Linda Pearsall, personal communication) indicated they concurred with that approach. Natural Heritage Program staff also indicated aquatic species should be evaluated to include a 200-foot corridor on either side of the stream, and portions of the watershed upstream of the aquatic occurrence should be included. A one-mile segment upstream of the element occurrence was included in the analysis. The entire watershed was not included since some of the natural heritage elements were located within lakes and large watersheds, and it was felt that these occurrences would get higher priority based simply on the size of the watershed.

The state's database also indicates whether a given species occurrence was historic or based on more recent observations. Historic sitings were given a lower weight based on input from the Natural Heritage Program. It should be noted that for historic listings, there is no evidence the species has been destroyed at that location.

The following weights were applied to each occurrence (note the aquatic corridor included for aquatic species):

- Endangered- recent or historic observation – 5
- Threatened/recent observation – 4



- Threatened/historic observation – 3
- Special Concern/recent observation – 3
- Special Concern/historic observation – 2
- Significantly rare/recent or historic observation – 1

The final comment from Natural Heritage Program was that sites with more occurrences of rare, threatened, or endangered species should get higher priority. Since each occurrence was accounted for, a watershed with multiple sitings of rare, threatened, and endangered species should receive a higher weight.

The Natural Heritage Program’s database also includes natural communities or special habitats. Most of these communities overlapped with the significant natural heritage areas and were not included in this portion of the analysis in order to avoid double counting them. However, there was one natural community that was not on the significant natural heritage area list, and this community was assigned a priority value based on the size of the area and a weight of 5 was applied based on the endangered status code.

Significant Natural Heritage Areas

A significant natural heritage area is an area within the State that contains a habitat that supports biodiversity. These sites are rated in terms of their significance. For this analysis, the following weights were assigned and normalized by the area of the watershed:

- National significance – 3
- State significance – 2
- Regional or Local significance – 1

Overall Natural Resources Needs Priorities

The priority values for all rare, threatened, and endangered species and significant natural heritage areas within a given watershed were summed, then normalized by the watershed area. This normalization ensures a watershed was not assigned a higher priority based solely on its size.

Prioritization Analysis

Greenways Incorporated utilized a prioritization analysis to identify areas that may warrant additional watershed protection measures, and where resources should be concentrated to protect and restore watersheds.

Priority watershed areas (based on sub-watershed basins), were determined for identifying water quality needs, and those watersheds impacted by future growth (see watershed prioritization methodology). The criterion in the Watershed Assessment (CH2M Hill) used two separate categories of data to reflect Human Resource Prioritization, and Natural Resource Prioritization. Each category based the criteria on levels of overall water quality health and future growth’s affect on water quality.

The parcel prioritization methodology targeted areas for open space acquisition and protection based on a two-tiered process of evaluation. The first component is an objective, scientific evaluation of the 81 watersheds. The second component is a community-based evaluation comprised of the 12 individual municipalities of Wake County and the unincorporated areas within the county. The results of this two-tiered approach led to the identification of lands for open space acquisition and protection. The results of both ecological evaluation and community evaluation areas are shown on the accompanying maps.

**Matrix
Evaluation
Criteria**

**Parcel
Prioritization
Methodology**

Resource Evaluation

The resource evaluation focuses both the ecological and community resources for the priority watersheds that are identified in the Watershed Management Plan. Of the 81 watersheds that make up Wake County, this study prioritized areas for water quality protection. The priority watershed areas were then evaluated for ecological factors that contained criteria such as:

- land coverage (forested tracts, and associated vegetative areas)
- land use (urban, rural, suburban)
- streams
- wetlands
- water recharge areas
- soils (hydric, slope, erodibility)
- FEMA (flood zones)
- areas supporting unique or rare natural communities

A matrix was developed that selected land areas based on size (parcels 50 acres to 500 acres), and proximity to four water quality based criteria:

- water recharge areas
- wetlands (NWI)
- hydric soils (perennially and seasonally wet)
- Federal Emergency Management Agency (FEMA) streams

Using a set of queries that focused on these characteristics, a prioritized listing for open space was developed.

Digital information obtained from Wake County, the State of North Carolina, and North Carolina CGIA, along with ArcView and Arc Map GIS software, was used to identify, rank, and prioritize areas of existing open space with the highest natural values suitable for acquisition or conservation.

In order to apply the matrix, the data from the two watershed prioritization study categories were combined and then ranked by sub-basin. This was then further broken into seven ranked watershed priority areas for each category. The 81 watersheds in Wake County were classified from highest to lowest priority based on water quality, with 1 having the lowest priority and 7 having the highest priority. A score of 6.0 to 7.0+ indicates that parcels within these individual watershed areas should be the highest priority in the system. A score of 5.0 to 5.99 indicates that a parcel should be considered for inclusion within the system. A score of 4.0 to 4.99 indicates that the parcel should be considered for inclusion within the system under objective criteria established by outside factors that are not identified by the applied matrix, such as the inclusion of a significant natural site. A score of 3.0 to 3.99 indicates that the parcel should be considered for inclusion within the system under subjective criteria established by outside factors that are not identified by the applied matrix, such as the inclusion of a significant historic site. A score of 2.0 to 2.99 indicates that the area should not be considered unless there are special circumstances. A score of 0.0 to 1.99 indicates that the area should not

be considered unless there are special circumstances, such as a donation of land. The highest ranked categories (those ranked 7, 6.0-7.0+) were combined to formulate the final targeted areas. The macro-level targeted parcel information derived from the matrix was further prioritized by the subjective identification of parcels from two separate categories ranked further by municipal, county, and nonprofit organization data input. The matrix was then applied to this final targeted priority watershed area.

Matrix Application Process

The matrix derived from the macro-level view of the county (watershed assessment and municipal plans) was used to determine potential target areas for parcel identification for open space acquisition. The criteria that makes up the matrix includes four separate categories:

- water recharge areas
- wetlands
- FEMA (100 year flood)
- hydric soils (both perennial and seasonally wet)

Within these separate categories, criteria were established based on two functions: all parcels meeting the criteria of the category that are 30 feet from the category and all parcels 50 acres or greater. Thirty feet was used because studies have shown that this is the minimum distance that will function as a buffer to protect water quality (Wenger and Flower, 2000). Fifty acres was used because studies have shown this is the smallest size in acreage that can function as wildlife habitat (Stutz, B., 1989). A matrix (parcel identification) was developed from all parcels within 30 feet and 50 acres in size or greater from criteria listed below:

- Criteria Soil Moisture:
 1. Hydric soils
 2. Contains areas of perennial wet soils and seasonally wet soils within 30 feet
 3. 50 acres or greater in size
- Criteria FEMA (100-year flood zone):
 1. Parcel within 30 feet
 2. 50 acres or greater in size
 3. current FEMA 100-year flood data
- Criteria Wetlands:
 1. Parcel within 30 feet
 2. 50 acres or greater in size, as defined by the current GIS data
- Criteria Water Recharge Areas:
 1. Parcel within 30 feet
 2. 50 acres or greater in size, as defined by the current GIS data

Use of Matrix Prioritization Analysis

In order to apply the matrix to the final targeted priority watershed area, each parcel was subjected to a set of equally weighted criteria that was used to rank and identify the final targeted parcel areas. To arrive at the individual parcel level, categories that were not considered in the macro-level watershed analysis, such as micro-level municipal, county, and nonprofit input data, were integrated into the final analysis. The categories were broken down into two areas: ecological resources and community resources. Each category was made up of criteria that ranked three levels for parcel identification.

The criteria focused on the micro-level of each parcel (unlike the macro-level determination) where every one was ranked for each category. The parcel areas then could be classified from highest to lowest priority based on the matrix criteria with 1 having the lowest priority and 3 having the highest priority. Each parcel was given priority based on the total score, or total number of criteria each met. The highest total score would be 21 and the lowest 0. It must be noted that not all parcels will meet all of the criteria or a total score of 21 (for the highest priority). In addition, all criteria in each category must be ranked separately and then combined to determine the overall ranking. Attempts to validate the ranking of a property based on one category criterion should not be used. As an example, the highest cumulative score (divided by the number of criteria in each category) indicates that a parcel should be included within the Open Space System. Conversely, a cumulative lowest score indicates that a parcel should not be included within the system at this time unless there are special circumstances.

By equally weighting the criteria, the model allows the ranking score to be adjusted to reflect the number of criteria each parcel meets for the highest score. As example, if all criteria are met in a selected priority watershed area, a score of 15 to 21 indicates that a parcel should be considered for inclusion within the system. Therefore, it should be given the highest priority for acquisition or protection. A score of 8.0 to 14 indicates that the parcel should be considered for inclusion within the system under objective criteria established by outside factors that are not identified by the applied matrix, such as the inclusion of a significant natural site. A score of 0.0 to 7.0 indicates that the parcel should be considered for inclusion within the system under subjective criteria established by outside factors that are not identified by the applied matrix, or there are special circumstances. The highest ranked categories (those ranked 15.0-21.0) were combined to formulate the final targeted areas.

The GIS database consists of several variables (or “layers”) that the criteria was derived from. These include natural and cultural resource data. Each variable represents different resources or features, such as:

- parcel proximity to hydric soils
- ecology
- vegetation communities
- wildlife habitat
- parks and greenways

- historic sites and buildings
- riparian buffers
- natural heritage resources
- wetlands
- water recharge areas
- floodplains

Before applying the matrix, parcels within a city or town's municipal limits, along with outlying sub-divisions, were excluded because they are either developed, contain mostly impervious areas, and/or are less than 50 acres in size. Each variable is ranked on a scale from 0 to 3 according to a specific value. As an example, the variable "Vegetation Communities" is ranked according to the type of existing vegetation.

Bottomland forests, hardwood swamps and mixed upland hardwoods would contain the highest quality for wildlife habitat, and are assigned a value of 3. An area in cultivation, managed herbaceous cover, and/or southern yellow pine has a value of 1.

Another example would be historic sites. A site listed on the National Register of Historic Places is given a value of 3, while a site on the state's National Register Study List has a value of 2.

Variables are then 'weighted' according to planning objectives. For example, the Wake County Open Space Plan Matrix gives a higher significance to upland hardwood forests, bottomland forests, floodplain forests and wetlands, because they are areas critical to water quality issues. While the variable rankings are based on objective scientific criteria and GIS analysis, the weighting of variables lends a subjective element to the analysis. Currently, upland hardwood forests, hardwood swamps and bottomland forests (ranking of 3) are weighted by a factor of 3. Although the Mixed Hardwoods/Conifers, evergreen shrubland, and deciduous shrubland are also weighted by a factor of 3, the data is only as good as the current GIS information and is weighted based on water quality issues.

The matrix was then applied to this final targeted priority watershed area using the following criteria. The matrix prioritization analysis can be used to identify areas where additional watershed protection measures may be warranted, where resources should be concentrated to protect and restore watersheds and where open space acquisition should occur.

The final level of prioritization must remain in a steady state of dynamic analysis. For example, the matrix allows for each individual community to use both public and private inputs to enrich the overall goal of protection or use of open space parcels. Municipal Prioritization Analysis is a needed tool to focus on subjective inputs that in the end reveal the refined micro-level parcel identification on a manageable acquisition level.

Category 1 Ecological Evaluation:

This is an evaluation of important vegetation, soil-limiting factors, and habitat for wildlife that is listed on the NC Natural Heritage Element Occurrence list within the Wake County, region, or state. Parcels that possess significant natural composition are also added. The lands that could be targeted for open space acquisition based on ecological factors alone and/or protection are identified.

These areas are important open space lands (no matter which sub-watershed they are in) to target for acquisition or protection because they are the most ecologically significant areas within the highest priority watershed areas. They may include areas of agricultural, historical, and recreational significance.

For example, a parcel within one of these targeted areas could serve to improve water quality while supporting wildlife habitat, and protecting historic property and offering hiking opportunities. The areas are based on the results of the ecological evaluation alone. The targeted areas are only one component of the larger plan, as ecological factors are one component being considered into the development of plan recommendations.

- Criteria Vegetative Communities:
 - 1). Parcel is not considered significant, does not possess any unique vegetation, and is quite commonly found in other portions of the Wake County. These areas include cultivated, managed herbaceous cover, and southern yellow pine.
 - 2). Parcel is considered significant because of vegetation that is significant, but is common in other parts of the Wake County. These areas include, mixed hardwoods/conifers, evergreen shrubland, and deciduous shrubland.
 - 3). Parcel possesses good examples of unique vegetation, and is common only to selected regions of the Wake County. These areas include bottomland forest, hardwood swamps, and mixed upland hardwoods.
- Criteria Wildlife Habitat:
 - 1). Parcel is not considered significant, does not possess any unique, wildlife habitat, or natural composition, and is quite commonly found in other portions of the Wake County.
 - 2). Parcel is considered significant because of unique/significant wildlife habitat or natural composition, but is common in other parts of the Wake County.
 - 3). Parcel possesses good examples of wildlife habitat, and species listed on the NC Natural Heritage Element Occurrence list, and is common only to selected regions of the Wake County.
- Criteria Soil Limitations: (soil erodibility)
These factors affect water quality and are identified from the Wake

County Soil Survey pages 78-79, and SSURGO information.

- 1). Severe - Parcel is not considered because of severe soil erosion if disturbed, and or slopes are greater than 10 percent
- 2). Moderate - Parcel is considered moderate where best management practices can minimize soil erosion, and or slopes are between 6 and 10 percent.
- 3). Slight - Parcels have low or slight soil erosion limitations, and or have slopes between 0 and 6 percent.

Category score equals cumulative points divided by three.

Category 2: Community Evaluation

An evaluation of where the property is located within the Wake County Open Space Plan as it relates to the human influences upon the land, and the human uses of the landscape.

For the open space strategies in Wake County to work in partnership with the 12 communities that fall within the county, additional resources need to be evaluated based on factors other than ecological. Human-based factors need to be considered. Each community underwent an evaluation as part of the open space study that examined such features as historic sites, farmland, land use, schools, existing/future municipal boundaries, and proximity of proposed/existing parks and greenways. Information was obtained from Wake County and local government open space plans.

The community evaluation examined lands that met many of the criteria listed in the prioritization section of this study, and other significant areas identified by public input through workshops held as part of each community's open space planning efforts. Each community evaluation included lands within corporate limits, ETJ's of local governments, and within each municipal study boundary. These areas are the responsibility of each individual municipality. However Wake County will serve as a facilitator and partner by assisting local governments in protecting open space within their jurisdictions and helping to complete open space connections between municipal areas.

- Criteria: Historic sites and significant buildings
 - 1). Parcel is not considered significant, does not possess any unique feature, and does not meet 50-year historic age.
 - 2). Parcel is considered significant because of, unique feature or is listed on the National Register Study List. Parcel also meets 50-year age requirement.
 - 3). Parcel possesses good examples of historic features and/or building and is listed as a NC Historic site, Wake County site, or is a site listed on the National Register of Historic Places. Parcel meets 50-year age requirement.

Category score equals cumulative points.

Cumulative Matrix Methodology

- **Criteria: Location**
An evaluation of where the property is located outside of a municipality's town limits.
 - 1). Parcel is located within a town ETJ and adjacent to existing Open Space areas.
 - 2). Parcel is located in an area outside of a town Extraterritorial Jurisdiction (ETJ).
 - 3). Parcel is located within the ETJ, not associated with existing Open Space areas.

- **Criteria: Recreation**
An evaluation of the parcel's connectivity to existing open space, parks, and/or natural areas.
 - 1). Parcel is unsuitable for any form of open space or recreational use, and will require significant repair to bring it to Wake County of Wake County standards for these purposes.
 - 2). Parcel has limited potential for open space or recreational use. The parcel can support limited passive recreation if carefully managed. The parcel can be used for limited scientific, utility, or educational purposes.
 - 3). Parcel has potential for unlimited passive recreational uses, and has several qualities which make it desirable for utility, infrastructure, scientific, or educational purposes.

- **Criteria: Schools**
A potential to host recreational activities, proximity to existing public/private open space parcels and other public facilities.
 - 1). Parcel is located in an area 2 miles or greater from an existing School.
 - 2). Parcel is located 1/2 to 2 miles from an existing School.
 - 3). Parcel is located within 1/2 mile or less from an existing School.

Category score equals cumulative points divide by 3.

After each category is ranked, it can then be included in the final parcel area determination. In order to narrow the parcel areas down even further, the cumulative scores of categories 1 (Ecology, Culture and Space) and 2 (Time/Opportunity) are tallied. The highest score available is 21. The higher the score is, the higher the priority for acquisition. The scores will be ranked as follows:

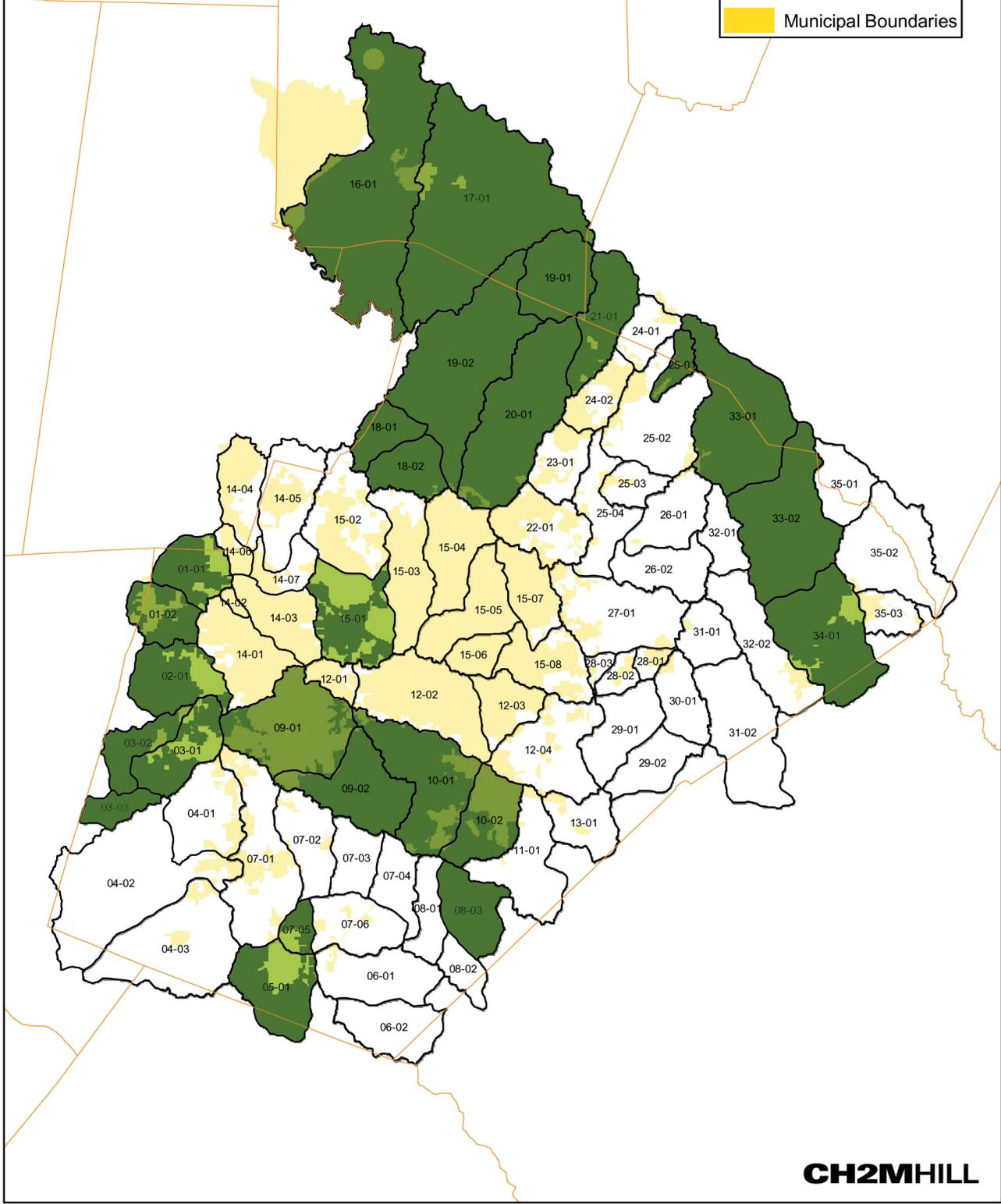
- 15 to 21 - 1st priority acquisition
- 8 to 14 - 2nd priority acquisition
- 0 to 7 - 3rd priority acquisition

The ecological evaluation and community evaluation employed a sequential multi-level ranking procedure. A set of queries for increasingly detailed spatial scales is answered (e.g., first levels looks at County-wide

Total Resource Prioritization

Legend

- County Boundary
- Municipal Boundaries



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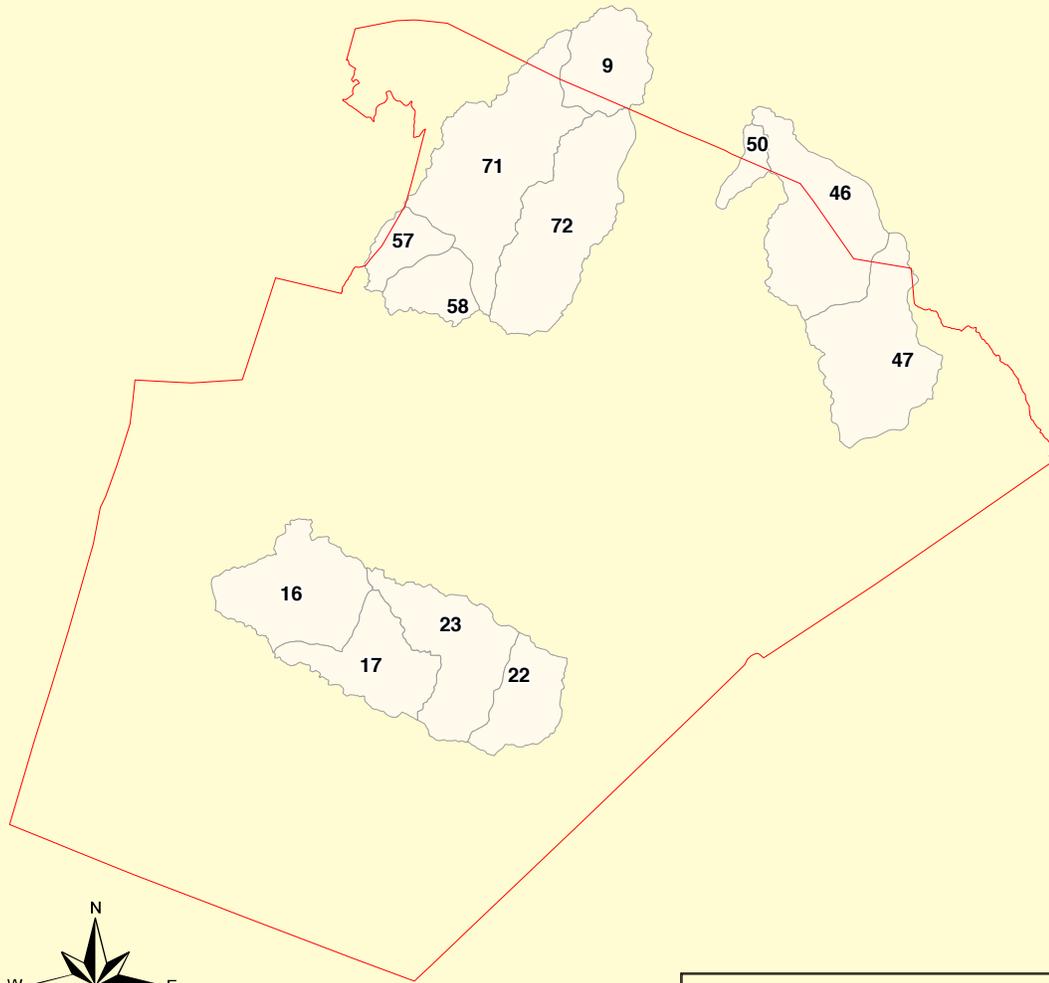
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level while the last level focuses on characteristics of specific parcel areas). Scores for each query are weighted to reflect the importance of the particular characteristic, and the sites are ranked based on the sum of the weighted scores. The highest scored site for each of the priority watershed areas goes onto the next level of more spatially detailed evaluation and ranking. Scores, weighting and rankings were conducted to identify sites for both conservation and acquisition goals (for both active and passive recreation).

The **level one** analysis is a coarse evaluation at the county scale which evaluates and ranks watersheds on characteristics such as whether

Priority One Watershed Area

Level Two



Legend

-  Wake County
-  Priority One Watershed Area
- 10** Sub-Watershed Number

NOTE:
Level Two prioritizes sub-basin watersheds based on discrete characteristics such as Human Resources Needs and Natural Resources Needs.

the sub-watershed is classified as healthy, healthy based on land use, impacted, impacted/restorable, impacted based on land use, impacted based on land use\restorable, degraded, and degraded/restorable.

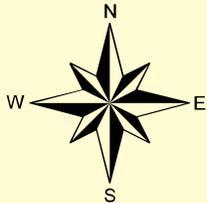
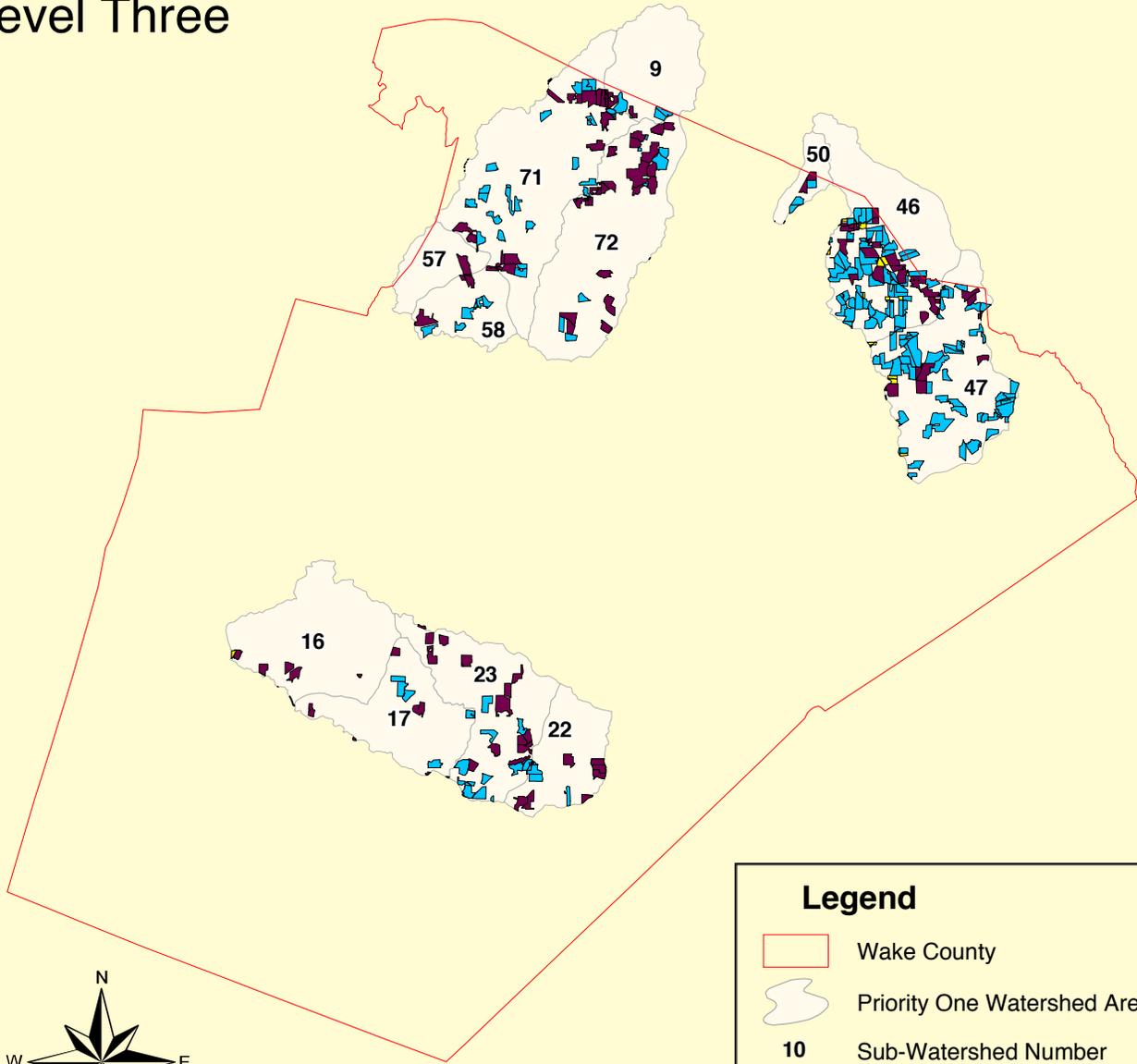
Level two was developed to prioritize sub watersheds within Wake County, which evaluated each based on natural resource and human resource prioritization (see CH2MHILL Water Quality Study). This level combines the highest ranked watersheds into seven areas of prioritization with 1 being the highest priority watershed area to acquire or protect. This ranking focused on characteristics for natural resource prioritization as plant, animal, special habitat, natural community, hydrology, and occurrence as a State Natural Heritage Area (SNHA); National, State, Regional, or Local. The Human Resource Prioritization focused on water wells, hydrology, recreational waters, open space (parks, etc.), and water supply watersheds. The highest ranked sub watersheds in each watershed were then subjected to level three ranking.

Level three prioritizes areas based on discrete characteristics such as water recharge areas, wetlands (NWI data), hydric soils, and FEMA flood data.

Level 4 is the last filter applied to prioritize the highest ranked areas of interest for immediate acquisition and/or protection. This level evaluates and ranks each selected area based on the score obtained from significant criteria for both environmental resources and human resources. Each criteria focuses on the micro-level of each selected area and the significance of occurrence and/or the proximity to a selected area. The criteria includes wildlife habitat, recreation (connectivity to open space, parks, etc.), ecology of vegetative areas (forested or managed land coverage's), and soils (slope and erodibility factors). The Human Resource criteria included historic sites/buildings, schools, and municipality location to selected areas.

Priority One Watershed Area

Level Three



NOTE:
Level Three prioritizes parcels based on discrete characteristics such as Water Recharge Areas, FEMA Stream data, Wetlands, and Hydric Soils. Level 3 Priority One Parcels are the highest ranked followed by Level 3 Priority Two Parcels, and Level 3 Priority Three Parcels which are ranked the lowest.

Legend	
	Wake County
	Priority One Watershed Area
10	Sub-Watershed Number
	Level 3 Priority One Parcels
	Level 3 Priority Two Parcels
	Level 3 Priority Three Parcels

By using a matrix evaluation system to quantify and rank variables according to cumulative values, the evaluation can be performed at a scale necessary to incorporate resource areas and arrive at an individual parcel level through subjective inputs by individual municipalities. The system is then used to establish a 'priority list' of sites for acquisition or protection. The priority list should then be used to field verify the existence of priority resources within previously identified areas by county, municipal, and/or nonprofit organizations.

Though the above categories will already be identified through the matrix, the MPA parcel data input would enrich the process by identifying parcels not included in the matrix, but that are deemed important to each individual community, the county, and citizens.

The MPA Map can be overlaid on the Cumulative Matrix Map to determine where it is ideal to protect land, not only from a water quality perspective, but also from an ecological, cultural and opportunity perspective.

The Municipal Prioritization Analysis (MPA) is a separate analysis from the Watershed Prioritization analysis. Both share the common goals of protection and open space acquisition, but the MPA acts like a final filter that has inputs to the matrix.

The Information was gathered for this analysis from existing Wake County, State and Federal GIS databases, along with public input. The primary focus of the municipal plans were to help identify areas that were deemed important due to the unique attributes and or character of the area.

Individual Open Space Plans were developed to be consistent with the larger comprehensive Open Space Plan for Wake County. The County has encouraged and supported the preparation and adoption of the municipal open space plans to ensure that there is continuity across jurisdictions. Each municipal plan focused on a multi-objective system, largely based on community input from the public, businesses, civic and community organizations, and public agencies. Open space was prioritized to fulfill multiple objectives, including:

- Better Floodplain Management
- Protecting Wildlife Habitat
- Improving Water Quality
- Providing for Recreation
- Encouraging Environmental and Cultural Education
- Promoting Personal Fitness
- Accommodating Alternative Transportation
- Serving as Recreational Resources

Municipal Prioritization Analysis

Results

In the Wake County Water Quality Watershed Study, seven priority watershed areas were selected from the 81, sub-watersheds included within Wake County (Level one). Focusing on these seven watersheds, the methodology (Level two) was used to evaluate and rank the opportunities for conserving open space in these priority areas. The result of the Level two analysis was that areas in the upper falls lake watershed, swift creek watershed, and upper little river and moccasin creek watershed were ranked first of the seven for both natural resource and human resource prioritization (see CH2MHILL Water Quality Watershed Study).

Following this effort, the methodology (level three) was used to identify, rank, and prioritize the open space areas in the number one ranked watershed areas as determined by the matrix. The level three ranking identified the highest-ranking parcel areas within the watershed area based on the size and influence on water quality. Finally, level four identified the most significant parcel areas as determined by the set of criteria in the micro-level determination for acquisition and/or protection.

Each individual municipal plan offers a more detailed explanation of the significance of the community areas selected. Refer to Chapter 3 and accompanying maps for individual municipalities. The community areas selected for parks (passive and/or active use), or greenways are based on the results of both public and local government inputs.

The areas selected are only one part of the overall plan, and each section should be looked at as a component of the larger county plan. Ecological factors have been considered in the development of these plan recommendations, with a focus on water quality as the most desirable goal. For the most part, many of these areas are not a contiguous set of parcels of land, but are instead streamside buffers and overland connections. Local residents and local governments, in addition to Task members, expressed a desire to protect the connection of open space, instead of isolating areas, while focusing on water quality protection, during the planning process.

References:

- Wenger, S.J., and Flower, L. 2000. Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances. Carl Vinson Institute of Government, University of Georgia. USA.
- Stutz, B. 1989. Up Against Ecology. Landscape Architecture. Washington DC. Pp. 44-49.

The following is a property evaluation process that will be used to compare properties identified through the macro-level prioritization process. The purpose of using the following criteria would be to compare and contrast nominated parcels and determine which properties would rank highest for acquisition within the Wake County Open Space System.

The ranking system used to evaluate each criteria of the parcel in question is itemized below. All criteria must be ranked separately and combined to determine the overall ranking. A score of 50 and higher indicates that a parcel should be included within the System. A score of 30 to 49 indicates that the parcel should be considered for inclusion. A score of 0 to 29 indicates that the parcel should not be included within the System at this time.

Location—An evaluation of where the property is located within the county. (Note: Location is the position of the parcel within rural, suburban or urban areas of the County. A parcel that is surrounded by highly urbanized lands would rate higher than a parcel in a rural area because of the potential for imminent loss). For parcels of 25 acres or less that are located in the most densely populated areas of the County, add a multiplier of 2 to the score.

1—Parcel is located in a rural area of county, but not within a sensitive watershed area.

2—Parcel is located within an urban growth area, but outside a sensitive watershed area, and the area is not experiencing immediate suburban growth and development.

3—Parcel is located within an urban growth area, outside a sensitive watershed area, and within an area which is experiencing rapid growth.

4—Parcel is located within an urban growth area, is within a sensitive watershed area, and is within an area experiencing rapid growth.

5—Parcel is located within an urban growth area, outside a sensitive watershed area, and is included within a project for which development plans have been submitted to the county for approval.

6— Parcel is located within an urban growth area, is located within a sensitive watershed area, and is included within a project for which development plans have been submitted to the county for approval.

7—Parcel is located within an urban area of the county, outside a sen-

Individual Parcel Evaluation Process

Qualitative Evaluation Criteria

sitive watershed area, and is currently surrounded by urban/suburban development.

8—Parcel is located within an urban area of the county, is located within a sensitive watershed area, and is currently surrounded by urban/suburban development.

Linkage – Defines the importance of the parcel within the overall greenway system and its ability to serve as a vital link or connector to the overall greenway system.

0—Parcel does not link to any portion of the Greenway system.

1—Parcel is at the end of an undeveloped greenway corridor, and does not link to any existing adjacent development portions of the county.

3—Parcel is at the end of an undeveloped greenway corridor, and links to surrounding parks, residential neighborhoods, schools, businesses or other community destinations.

4—Parcel is located in the mid section of an undeveloped greenway corridor and also links to surrounding parks, residential neighborhoods, schools, businesses or other community destinations.

5—Parcel is located between two segments of existing developed greenway facilities, as well as to surrounding park, residential neighborhoods, schools, businesses or other community facility.

Proximity—Where is the parcel of land located in terms of its proximity to surrounding, existing public/private open space parcels, schools, activity centers, residential neighborhoods or community destinations? (Note: Proximity is the relative position of the parcel of land to other important landscapes throughout the County. A potential parcel gets a higher score if it is located in close proximity to an important landscape. It gets a lower score if it is farther away from an important landscape.)

1—Parcel is two miles from an existing park, school, activity center, residential neighborhood or community destination.

2—Parcel is between one-quarter mile and two miles from an existing existing park, school, activity center, residential neighborhood or community destination.

3—Parcel is separated from existing park, school, activity center, residential neighborhood or community destination by more than one property or less than one-quarter mile.

4—Parcel is separated from existing park, school, activity center, residential neighborhood or community destination by one property

5—The property lines of the parcel abut an existing park, school, activity center, residential neighborhood or community destination.

Accessibility—The relationship of the property to other transportation routes.

1—Parcel is not accessible to the public. Parcel is totally isolated from all existing and proposed forms of access.

2—Parcel is not currently accessible to the public, but is in close proximity to at least one form of existing public access. Adjacent landowners are not willing to grant right of public access.

3—Parcel has at least one form of public access, adjacent property owners are willing to grant the right of public access.

4—Parcel has at least one form of public access but does not have existing infrastructure in place to provide for immediate public access.

5—Parcel has at least two forms of public access and can be immediately accessed by public.

6--Parcel is located within 1/4 mile of a mass transit station.

Aesthetic Quality—An evaluation of the property’s scenic qualities or outstanding physical characteristics, such as significant geologic formation, unique vegetation, outstanding views of surrounding landscape, or is a significant parcel of land due to the composition of its natural resources.

1—Parcel has little or no aesthetic quality, and very little natural value remains.

2—Parcel has very limited aesthetic quality and would require extensive human modifications to become an appealing property.

3—Parcel has a variety of dispersed aesthetic qualities which, if successfully exposed, would make the site appealing and a valued natural resource.

4—Parcel has one significant aesthetic quality which makes it an appealing and attractive natural resource.

5—Parcel has several outstanding aesthetic qualities which have made it an attractive, noteworthy property and one which serves as a natural landmark within the overall landscape.

Use/Utility—An evaluation of the property’s ability to accept a number of specific uses for active or passive recreation, scientific (biological, zoological), or educational (parochial, college) purposes.

1—Parcel is unsuitable for any form of human use.

2—Parcel has limited potential for human use. The parcel can support limited passive recreation if this recreation is carefully managed. The parcel can be used for limited scientific or educational purposes.

3—Parcel has opportunity for unlimited passive recreation use, and can support a limited range of active recreation uses. Parcel has limited scientific and educational value.

4—Parcel provides opportunity for unlimited passive recreation uses, and is capable of supporting a wide range of active recreation uses. Parcel has several qualities which make it desirable for scientific or educational purposes.

5—Parcel provides opportunity for unlimited range of passive and active recreation uses. Parcel has several qualities which make it desirable for educational and scientific purposes.

On Open Space Plan—The property is located within one of the designated land types in the adopted Wake County Open Space Plan.

1—Parcel is not located within selected land types as illustrated on Open Space Plan, nor is included within land types as defined by Open Space Plan.

2—Parcel is not located within selected land types as illustrated on Open Space Plan, nor is included within land types as defined by Open Space Plan, but should receive consideration for inclusion within Plan because it has received a high overall ranking.

3—Parcel is located within selected land types as illustrated on Open Space Plan, and is included within land types as defined by Open Space Plan, but is not located in a high priority category.

4—Parcel is located within selected land types as illustrated on Open Space Plan, and is included within land types as defined by Open Space Plan, and is located in a high priority category.

5—Parcel is located within selected land types as illustrated on Open Space Plan, and is included within land types as defined by Open Space Plan, and is located in a high priority category, and requires immediate action for protection.

Threat of Loss—An evaluation of the property in terms of the current land use and the pace of urban/suburban growth.

1—Parcel is guaranteed to be conserved and protected by a deed restriction, easement, or established regulatory authority in its natural condition.

2—Some regulatory authority currently protects property in its natural condition. Potential for urban/suburban development is low.

3—Regulatory authority does not provide adequate protection of property in its natural condition. Property is considered average for potential urban/suburban development.

4—Current owner has expressed a desire to sell property or develop property in near future. No regulatory authority exists to protect property in its natural condition. Property is considered excellent for potential urban/suburban development.

5—Parcel is slated for immediate development. No regulatory authority exists to protect property in its natural condition.

Rarity—An evaluation of whether the parcel contains rare species of vegetation, supports a habitat for wildlife which is rapidly disappearing within the county, or is regarded as a property which possesses significant natural composition.

1—Parcel is not considered rare, does not possess any unique vegetation, wildlife habitat, or natural composition, and is quite commonly found in other portions of the county.

2—Parcel is considered significant because of vegetation, wildlife habitat, or natural composition that is significant, but is common in other parts of the county.

3—Parcel possesses good examples of rare vegetation, or wildlife habitat, or natural composition, and is common only to selected regions of the county.

4—Parcel contains rare vegetation, or wildlife habitat, or natural composition, and is found only in a few properties located within the county.

5—Parcel contains rare vegetation, or wildlife habitat, or natural composition, and is considered to be the only parcel within the county to exhibit these resources.

Flood Plain Protection—An evaluation of the property reveals that it contains flood plain and drainage basins that are part of the county’s stormwater or drinking water system, or the stormwater or drinking water system for another city government. The stream is subject to the Clean Water Act permitting process due to the stormwater or drinking water system. Add a multiplier of 2 to the total score.

1—Parcel contains a flood plain and drainage conveyance, but the stream is not a regulated stream of the state or federal government.

2—Parcel contains a flood plain and drainage conveyance, and is a federal, state or county regulated stream.

3—Parcel contains a flood plain and drainage conveyance, and is a federal, state or county regulated stream, but is not a primary source for a stormwater or drinking water system, but is a tributary stream to the system.

4—Parcel contains a flood plain and drainage conveyance, is a federal, state or county regulated stream, is on the primary stream of the stormwater or drinking water system, but has limited development potential due to frequent flooding.

5—Parcel contains a flood plain and drainage conveyance, is a federal, state or county regulated stream, is on the primary stream of the stormwater or drinking water system, and has high development potential but no approved development plan.

6—Parcel contains a flood plain and drainage conveyance, is a federal, state or county regulated stream, is on the primary stream of the waste water or drinking water system, and has high development potential and a development plan has been submitted to the county for approval.

Cultural/Historic Resources—An evaluation of whether the parcel contains documented cultural resources, listed historic buildings or landscapes, or known cultural resources, or historical buildings or landscapes that are rapidly disappearing or being encroached upon within the county. (Note: For properties that are eligible for the Registry of Historic Places or for state or federal list of Protected Properties, add a multiplier of 2 to the total score)

1—Parcel does not contain documented cultural resources, or listed historic building or landscapes, or known cultural resources, or historical buildings and landscapes.

2—Parcel is considered significant because of documented or known cultural resources, listed historic buildings or landscapes, or historical buildings or landscapes, but these are common throughout the county.

3—Parcel possesses good examples of documented or known cultural resources, listed historic buildings or landscapes, or historical buildings or landscapes, but these are common to selected sections of the county.

4—Parcel contains documented or known cultural resources, listed historic buildings or landscapes, or historical buildings or landscapes, that are rare in the county.

5—Parcel contains documented or known cultural resources, listed historic buildings or landscapes, or historical buildings or landscapes that are considered to be the best, or only parcel within the county to contain these resources.

Manageability—An evaluation of the parcel based upon the ability of a public or private agency to effectively manage the land so that it does not become a nuisance to the community.

1--Parcel is unmanageable due to location, size. Proper management from a public or private agency, other than the county, is unlikely. Landform is unmanageable.

2--Parcel is difficult to manage due to frequent occurrence of natural disasters, because it is located outside reasonable distance for proper management, and is too expensive to effectively manage. Landform is difficult to manage. Proper management may be inefficient.

3--Parcel will require constant management. Landform provides opportunity for effective management. Public or private agency is able to assume responsibilities. Difficult location for management.

4--Parcel will require regular management. Landform lends itself to ease of management. Public or private agency can assume immediate management. Location of parcel is convenient for management.

5--Parcel requires little management. Public or private agency is already managing property.

Quantitative Evaluation

The following criteria could be used to determine which specific parcels of land are to be included within the Open Space System.

Cost—A complete financial evaluation should be prepared by the county to determine the value of the property, whether the county will be required to purchase the property, if the sale of the property to the county will result in a loss of tax revenues, and the ability of the county to purchase the land.

Present tax value of property \$ _____

Appraised value of property \$ _____

\$ _____

\$ _____

_____ Parcel will require purchase at fair market value.

_____ Parcel can be purchased at less than fair market value.

_____ Parcel can be purchased at a negotiated price.

_____ Parcel will be donated to county.

_____ Sale of property will result in a loss of tax revenues which are considerable.

_____ Sale of property will result in a loss of tax revenues which are considered to be insignificant.

_____ County is unable to purchase property.

_____ County is able to allocate partial funds for purchase of property, must find another source of funding.

_____ County is able to obtain full title to property in part through payment of funds to landowner and donation of property to county.

_____ No cost is involved in obtaining full title to property.

Property Evaluation Form

Size of Parcel: _____ acres
Shape of Parcel: Please attach survey or a reproduction of property configuration from County Planning GIS maps.
Name of Parcel: _____
File No: _____
Tax Map Parcel Number: _____
Owner/Phone: _____
Address: _____

SITE CHARACTERISTICS

Topography: _____
Vegetation: _____
Stream or lake: _____
Soils: _____
Utility lines, easements: _____
Existing structures & conditions: _____
Flood Plain: _____
Wetlands: _____
Accessible by the following road type:
Residential _____ Collector _____ Arterial _____
Other (please specify) _____
Unique features: _____

SITE LIABILITIES

(Note concerns about erosion, trash, dumping, mosquitoes, water, pests, access, maintenance & policing capabilities, etc.)

Level 1 Environmental assessment is available:
Yes _____ No _____

USE/UTILITY: (good, fair, poor?)

Unique flora/fauna: _____
Wildlife habitat: _____
Groundwater recharge: _____
Flood protection: _____
Active recreation: _____
Passive recreation: _____
Historic interpretation: _____
Scientific research: _____

RANKING: Overall Score: _____ (from Qualitative Criteria)

Criteria	Score*	Comments
Location	_____	_____
Linkage	_____	_____
Proximity	_____	_____
Accessibility	_____	_____
Aesthetic Quality	_____	_____
Use/Utility	_____	_____
On Open Space Plan	_____	_____
Threat of Loss	_____	_____
Rarity	_____	_____
Flood Plain Protection	_____	_____
Cultural Historic Resources	_____	_____

(*include any multipliers in total)

SUMMARY: _____

STAFF RECOMMENDATION:

- Zoning: _____
- Purchase: _____
- Reservation: _____
- Density Credits: _____
- Dedication: _____
- Fee-in-Lieu: _____
- Accept as Gift: _____
- Lease: _____
- Easement Required: _____
- Option: _____
- TDR: _____
- PDR: _____
- Non-profit organization: _____

Completed By: _____

Date _____