Natural Resources Valuation

Introduction

The NRI collected data on many types of resources such as land cover types, forest stand groups and types, soils, streams and waterways, wetlands, and slope percent among others. Land cover types vary widely across the City and range from urbanized areas with high amounts of impervious surfaces to agricultural land which has remained in a similar land use since European settlement. Forest stand groups produce many different ecological and environmental benefits and are highly variable across the City. Soils vary widely in type, associations, and characteristics, including fertility, permeability, restrictions to root depth, erodibility, and hydric characteristics. Streams and other waterways help provide aquatic habitat for many different types of flora and fauna. Wetlands provide a wide range of environmental benefits such as ground water recharge, stormwater absorption, and water quality improvements. Slope percent affects a wide variety of factors from erosion potential, to stormwater management, viewsheds, vegetation composition, and suitability of land uses.

After completion of the NRI, a citizen survey was created to develop a valuation system to be the basis of the natural resources assessment. The survey used a Likert scale to determine citizen values related to natural resources. Respondents were asked to rank a variety of natural resources in terms of their priority for conservation. They were also asked to rank how they value some of the various attributes of natural resources. The results of the citizen survey are provided in Appendix E. The survey was administered immediately following public input meetings for the Natural Resources Inventory. These meetings were held on the 21st of November, 2006, the 2nd of December 2006, and the 8th of January 2007. Surveys were also made available on the City's website or were provided by hardcopy upon request.

Results

General Rankings of Resources and Attributes are represented by the following tables. The first table (Table 1) represents citizen scoring of multiple natural resources. In many instances, natural resources will overlap. Forests ranked the highest in terms of conservation priority. Lakes and Streams followed closely with high rankings as well followed by Wildlife Habitat. Threatened, Endangered, and Sensitive species (TES) also ranked high. Agricultural land ranked lowest of the general categories of natural resources.

Natural Resource being ranked	Response Average	Valuation
Forests	4.45	89
Lakes	4.34	86.8
Streams	4.34	86.8
Wildlife Habitat	4.31	86.2
Threatened Endangered & Sensitive Species	4.13	82.6
Historic/Cultural	3.92	78.4
Grasslands	3.82	76.4
Wetlands	3.74	74.8
Viewsheds	3.58	71.6
Steep Slopes	3.42	68.4
Agricultural Land	3.34	66.8

Table 1 – general ranking of natural resources by resource type

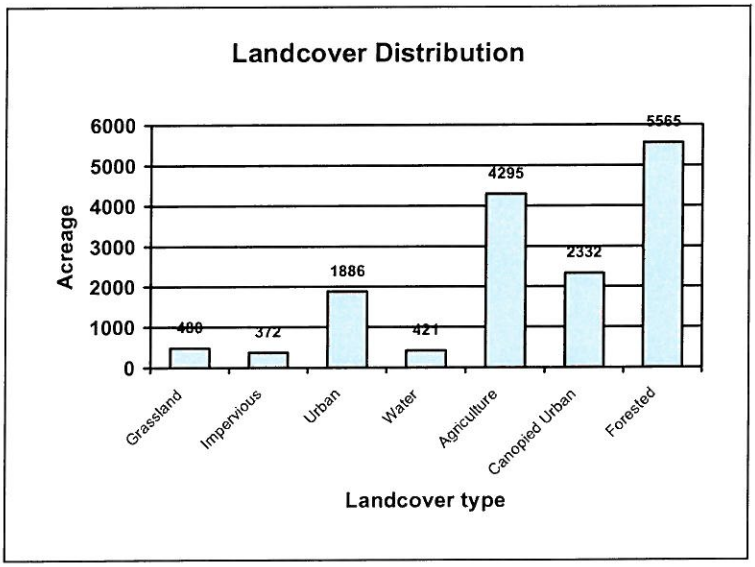
The following table (Table 2) represents how citizens value some of the various attributes of natural resources. Environmental benefits, scenic value, and contribution to community character all score high. Ability to provide products scored lowest.

Attributes of natural resources being ranked	Response Average	Valuation
Environmental benefits (air & water quality etc.)	4.5	90
Scenic value	4.26	85.2
Contribution to community character	4.18	83.6
Ability to support recreation	3.87	77.4
Ability to support biodiversity	3.82	76.4
Ability to provide products (wood game crops etc.)	3.26	65.2

Table 2 – general ranking by attributes of natural resources

Land Cover distribution varies widely throughout the City. Land cover types were split into five categories (forested, agricultural, water, grassland, and developed) and three subcategories. The Forested delineation was based on stands that were generally continuous and at least one hundred and twenty feet wide or five acres in size. This determination includes the absence of urban structures and agricultural development, and a minimum of ten percent stocking of trees. The Agriculture delineation was determined based on land-use activities including, but are not limited to, non-timber crop production and grazing. This delineation is also typically characterized by a lack of urban structures.

The land cover type of Water generally included streams at least one hundred feet wide and bodies of water larger than four and one-half acres. In order to provide more accurate area calculations, an occasional smaller body of water was included when it could be readily determined that the water body was a well established lake and not a cattle pond. Grasslands were a delineation that included areas such as the TVA and Texas Gas lines where woody vegetation is suppressed by removal cuts as well as herbicide applications. The Developed land cover delineation is broken down into three subcategories. These included Canopied Urban, Urban, and Impervious. The term urban was not applied to represent density of residential dwelling, but rather to describe the relationship of impervious surfaces and the presence of artificial structures. Canopied Urban delineation was described as having moderate amounts of impervious surface such as residential structures, driveways, and pools etc. (where infiltration of the surface by air, water, and biotic factors is highly restricted by non-porous layers) as well as high amounts of canopy coverage (> 20% coverage of the entire delineated area). These areas were typically represented by older neighborhoods where tree canopy was fairly well established. The Urban delineation was characterized by areas with a low percentage of canopy (< 20% canopy cover) and high amounts of impervious surfaces. These areas were typically represented by new neighborhoods with little or no tree canopy. The Impervious delineation describes areas that are at least twenty five acres in size, have high amounts of impervious surfaces, and little or no tree canopy. These areas include warehouses, parking lots, and highways. While there are seven landcover categories, only four of them are dominated by natural resources and will be used for prioritization of natural resources. The other landcover categories, considered as dominated by urban or suburban land uses, were given a zero conservation valuation unless certain features, such as lakes, were delineated within the area. The following graph depicts the landcover distribution in Lakeland while Table 3, depicts the citizen's conservation valuation for the different landcover types.



Landcover	Response Average	Valuation
Forests	4.45	89
Water	4.34	86.8
Grasslands	3.82	76.4
Agricultural Land	3.34	66.8

Table 3 – ranking by landcover type

The following tables (Table 4 & 5) represent the contribution of land cover types to community character and scenic value as ranked by the citizens. Forested lands and water ranked highest for both attributes with agricultural land ranking lowest for both. These rankings are consistent with previous rankings indicating that forested lands and water are the highest priorities for conservation.

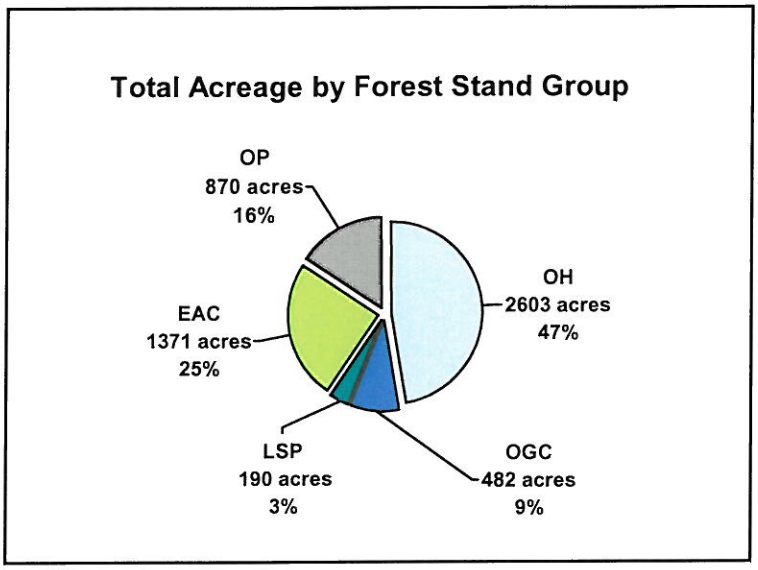
Land cover types ranked in terms of contribution to community character	Response Average	Valuation
Forested Land	4.47	89.4
Water	4.34	86.8
Grassland	3.71	74.2
Agricultural Land	3.18	63.6

Table 4 – ranking of landcover types by contribution to community character

Land cover types ranked in terms of scenic value.	Response Average	Valuation
Forested Land	4.5	90
Water	4.32	86.4
Grassland	3.71	74.2
Agricultural Land	3.03	60.6

Table 5 – ranking of landcover types by scenic value

Forest Stand Groups (FSG), designated by the Society of American Foresters were delineated during the Natural Resources Inventory. These stand groups are based on the prevalent species composition and their associations and cohorts. These groups differ in composition and site location. There can also be overlap of associated species. For example the Oak-Hickory (OH) group, which is generally an upland group, has a regular group of associates. Some of these associates have niches that can also occur in wet site stand groups such as Elm-Ash-Cottonwood (EAC) and Oak-Gum-Cypress (OGC). Regardless, each group has an overall unifying theme where the majority of the dominant and co-dominant trees are made up of consistent species and consistent relationships between species. Each group will also have certain unifying site characteristics that steer it, depending on disturbance regimes, toward a particular climax vegetative stage. Overlap and niches occur at the species level as well. Consider a sweetgum whose niche spans over all stand groups in Lakeland. However, there are some sites where sweetgum can not survive due to the high water table and frequent flooding. The citizen survey asked respondents to rank not only the value of forests within the City but also the specific Forest Stand Groups. During the public presentations, which preceded the survey, City staff described the various forest stand groups to the attendees. The complete results of the survey are presented later in this section. Forest stand group distribution is included below and is broken down into acres and percent distribution. Forest stand group descriptions are included as Appendix A and more detailed information regarding forest stand groups is provided in the City's Natural Resources Inventory.



Valuation of FSG as determined by citizen survey is as follows;

Forest Stand Group	Response Average	Valuation
Oak-Hickory	4.42	88.4
Oak-Gum-Cypress	4.03	80.6
Oak-Pine	3.82	76.4
Elm-Ash Cottonwood	3.63	72.6
Loblolly-Shortleaf-Pine	3.24	64.8

Table 6 – ranking of forest stand groups

As shown in Table 6 above, Oak-Hickory forests were the most highly valued within the community followed closely by Oak-Gum Cypress.

The following tables, Tables 7 & 8, represent how certain attributes and characteristics of forest stands were valued by citizens. The results indicate that stand health, percentage of native species, and connectivity are all important attributes of forest stands to be considered when prioritizing conservation efforts. Stand origin, that is whether the stand originated due to human activity or by naturally occurring processes, ranked lowest in terms of conservation priority.

Mature hardwood stands ranked highest overall in terms of conservation priority. Pine plantations scored lowest in terms of conservation priority. This is consistent with the relative ranking of the Oak-Hickory group and the Loblolly-Shortleaf Pine group.

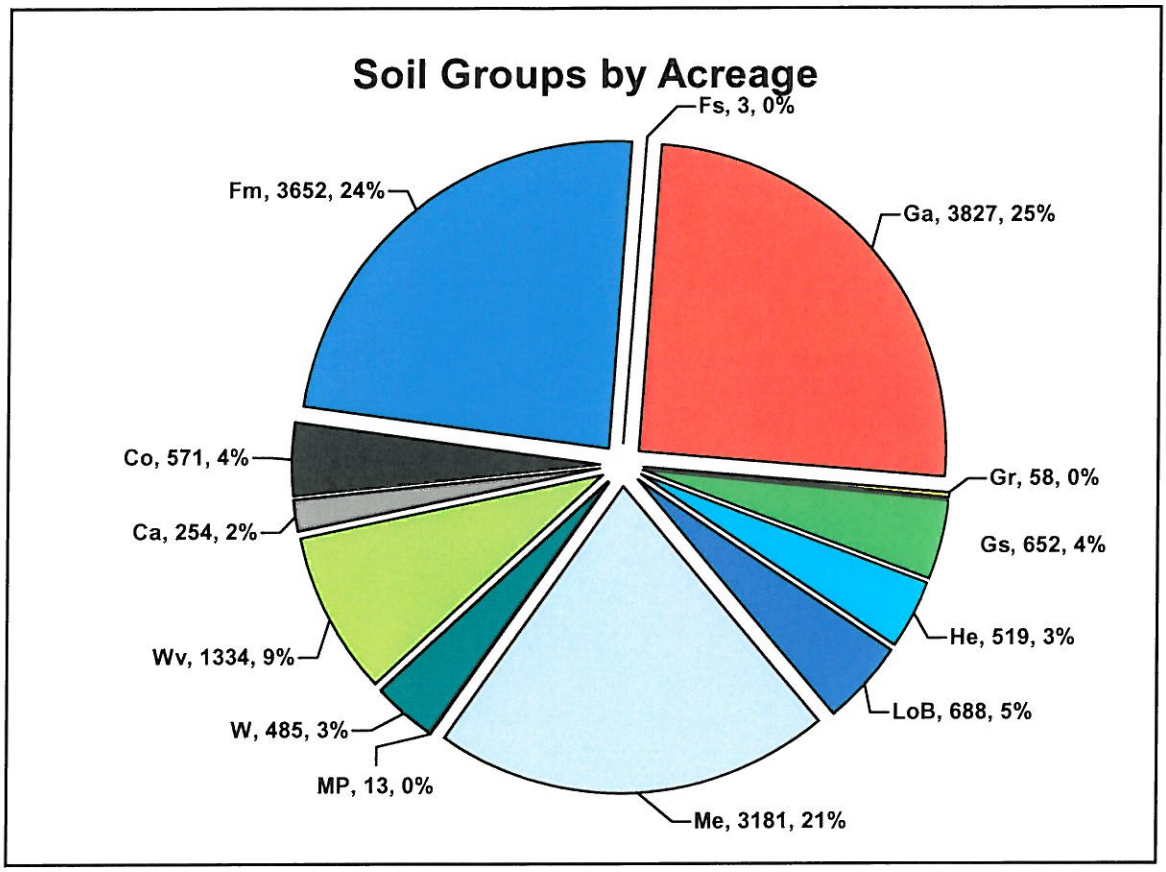
Stand Attributes asked to be ranked as criteria for prioritizing conservation.	Response Average	Valuation
stand health	4.16	83.2
percentage of native species	4.16	83.2
connectivity to other habitats	4.11	82.2
stand age	4.08	81.6
size of contiguous stand	3.89	77.8
restoration potential	3.87	77.4
stand origin (natural or human induced)	3.29	65.8

Table 7 – ranking of forest stands by attributes

Types of stands being ranked in terms of conservation priority	Response Average	Valuation
mature hardwood stands	4.5	90
naturally occuring stands	4.21	84.2
upland hardwood stands	4.16	83.2
young hardwood stands	4	80
bottomland hardwood stands	3.97	79.4
silviculturally produced stands	3.29	65.8
pine plantations	2.97	59.4

Table 8 – ranking of forest stands by stand characteristics

Soils play an integral role in the natural landscape of the City. Soils determine water table level, water and nutrient carrying capacity and availability, rooting zones and depth, runoff, and water and nutrient leeching to name a few. These soils can influence vegetation composition, erosion, site fertility, operative ability, and suitability for different types of activities. The figure below illustrates the high diversity of soils in Lakeland. This diversity can be attributed to the variety of topography and moisture regimes, including streams and waterways, located within the City. Further descriptions of soil types are included as Appendix B.



Soil valuation was derived by considering qualifiers such as fertility, permeability, presence of a fragipan (a subsurface soil layer that can restrict water movement and root penetration), and whether or not the soil is classified as hydric. These qualifiers were were derived from the Natural Resources Conservatin Service's Soil Survey for Shelby County and were given scores, on a 1-5 scale, based on how they relate to the attributes of natural resources that the citizens ranked in the survey. These rankings were then averaged together and multiplied by 20 to get their individual conservation valuation.

Table 9 below provides the rankings assigned to each qualifier as further described herein. Fertility relates to a soil's ability to support healthy and diverse plant life. Fertility rankings ranged from 0 (mining pit and water) to 5 for the most highly

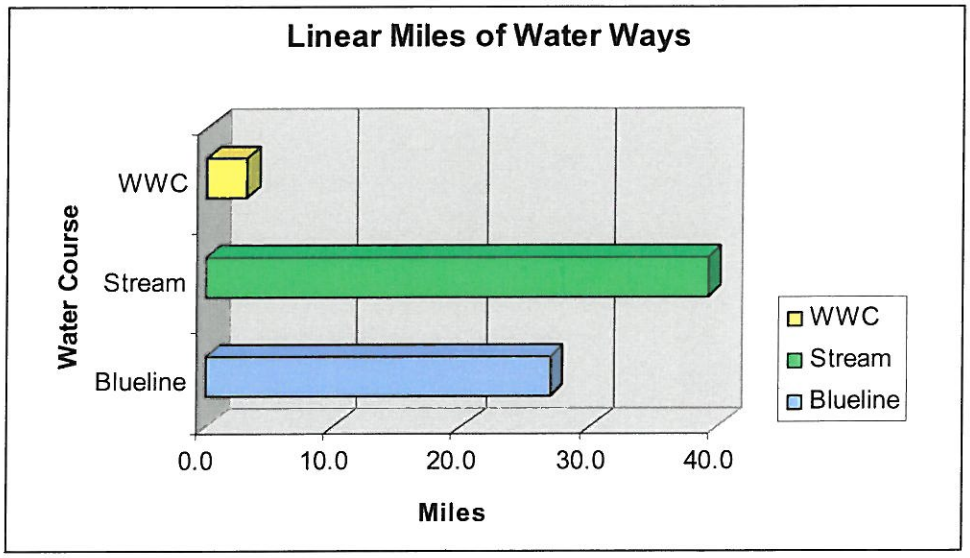
productive soils (Memphis, Loring, and Collins). Permeability relates to the soil's ability to infiltrate water. This has implications for water quality, plant growth, erosive potential, and other factors. Permeability within Lakeland's undisturbed soils was generally high. It is important to note, however, that this permeability is only for non-disturbed soil conditions. The general nature of Loess soils in Lakeland makes them extremely susceptible to compaction which leads to severe permeability limitations. Fragipan is generally a subsurface soil layer that can limit water movement and root penetration. This has impacts on the ability of a soil to support plant growth and to improve water quality. Fragipan rankings ranged from 1 (soils with distinct fragipans) to 5 (soils with no fragipan). Hydric soils can support the formation of wetlands and wetland functions. Hydric rankings included 3(not hydric), 4(partially hydric), and 5(hydric).

Soil seriesvaluation is as follows;

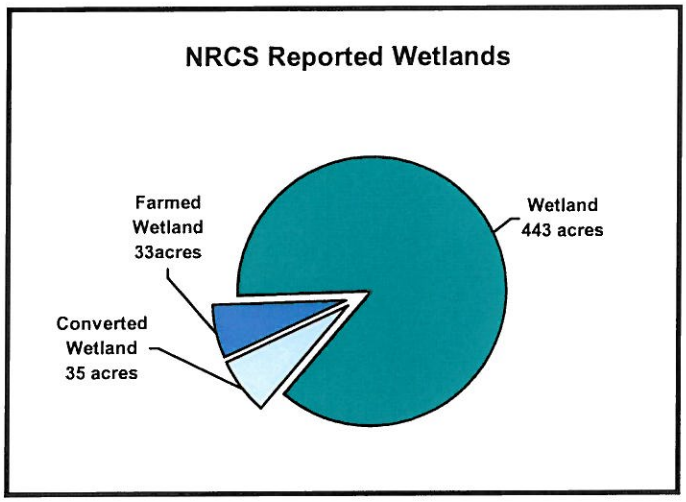
SOIL SERIES	Fertility	Permeability	Fragipan	Hydric Class	SCORE	VALUATION
Calloway Silt Loam	3	3	1	3	2.5	50
Collins Silt Loam	5	5	5	3	4.5	90
Falaya Silt Loam	3	5	5	4	4.3	85
Filled Land Silty	1	5	1	3	2.5	50
Grenada Silt Loam	3	5	1	3	3.0	60
Graded Land, Silty	1	5	1	3	2.5	50
Gullied Land (Silty)	1	5	1	3	2.5	50
Henry Silt Loam	1	5	1	5	3.0	60
Loring Silt Loam	5	5	3	3	4.0	80
Memphis Silt LoamB	5	5	5	3	4.5	90
Mining Pit	0	3	1	3	1.8	35
Water	0	0	0	0	0.0	00*
Waverly Silt Loam	1	5	5	5	4.0	80

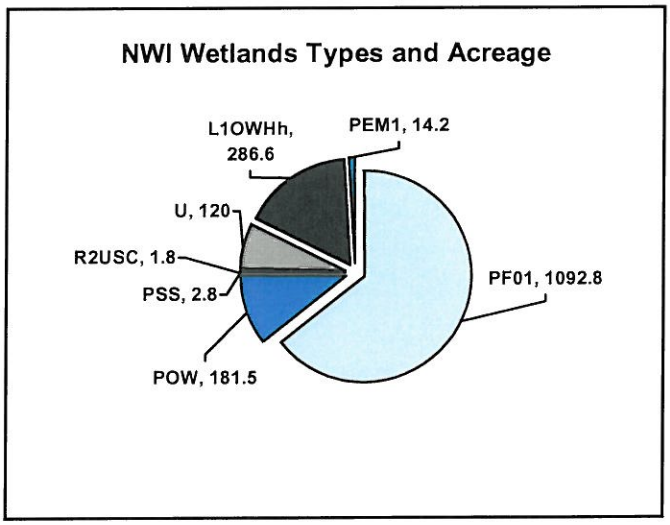
Table 9 – ranking of soils by soil series.
*Water was ranked using the landcover GIS shapefiles.

Streams and waterways are another highly recognizable component of Lakeland's natural resources. Within the City, there are many types of water resources such as streams, lakes ponds, and wetlands. The Loosahatchie River, Oliver Creek, Scott's Creek, Clear Creek, and many others flow into and out of the City. During the NRI, numerous lakes and ponds were noted being scattered throughout the City and ranging from Garner Lake at over 240 acres to small cattle ponds less than two acres in size. Many of these water features contain fish and other aquatic organisms. It was also noted that ponds and lakes were sometimes connected to or were associated with streams, which can be dependent on the lakes and ponds. For example, the Garner Lake spillway directly feeds Scott's Creek, one of the few non-degraded streams within the City. In some areas, where topography is conducive, streams and lakes can influence a site in such a manner as to develop wetland characteristics. Three types of linear waterways were identified in the NRI, USGS blueline streams, Tennessee Department of Environment & Conservation (TDEC) defined streams, and TDEC defined wet weather conveyances (WWC).



Wetland locations, where known, were listed in the NRI. In addition, areas of high potential for wetlands were indicated utilizing the National Wetlands Inventory of the US Fish & Wildlife Service, wetlands maps from the Natural Resources Conservation Service (NRCS), and Hydric Soils as per the Shelby County Soil Survey. Wetland classification codes are included as Appendix C. Wetlands are widely recognized as critically important areas for floral and faunal habitat as well as for water quality concerns. In a wetland, shallow water covers the land surface or saturates the soil, causing physical and chemical changes that dictate the kinds of plants and animals that can thrive there. Wetlands improve stormwater quality by trapping sediment and retaining or converting contaminants and nutrients. They also reduce river flood crests by storing water and releasing it slowly over time. Wetlands distribution, acreage, and valuation are listed below. Detailed wetlands descriptors for the National Wetland Inventory are located in Appendix C of this document.





Water Feature	Response Average	Valuation
Lakes	4.34	86.8
Streams	4.34	86.8
Wetlands	3.74	74.8

Table 10 – ranking by water feature type

Slope percentages were identified in the NRI through the use of the City's Geographical Information System. Two-foot contours were analyzed to develop slope percentage measures. When associated with soil types, topography plays a major role in erosion and runoff. When associated with streams, topography (along with soils) help determine the extent of natural buffers that are required to make sure that water quality does not suffer from sedimentation and non-point source pollution. Topography also has a defining role in vegetation cover due to influences such as solar aspect and water drainage. The survey responses to the valuation of slopes are as follows in Table 11.

Slope Categories	Response Average	Valuation
Moderate Slopes (< 10%)	3.29	65.8
High Slopes (10% - 20%)	3.61	72.2
Very High Slopes (> 20%)	3.55	71
Short slope length (<100')	3.34	66.8
Moderate slope length (100-300')	3.55	71
Long slope length (>300')	3.63	72.6

Table 11 – ranking of slopes by slope categories

Discussion

General

The survey revealed that forests ranked highest in terms of conservation priority. Lakes and Strecams followed closely with high rankings as well followed by Wildlife Habitat. Threatened, Endangered, and Sensitive species (TES) also ranked high. Currently the City has no mechanism for incorporating consideration for TES species. This conservation priority ranking warrants further research into methods for assessing and protecting these imperiled species. Note that of the general natural resource categories, agricultural land ranked lowest in terms of conservation priority. However, "contribution to community character" ranked as the third highest valued attribute of natural resources. Agricultural land certainly contributes to community character. It is assumed that the low conservation priority ranking of agricultural land is due mainly to the fact that most agricultural land within Lakeland is non-forested cropland or pasture. This interpretation would be consistent with the high priority ranking of forested lands, wildlife habitat, and TES species. The low ranking of agricultural land may also be due to a conception within the community that agricultural lands are not necessarily 'natural' resources.

When asked what about natural resources citizens valued most, attributes such as environmental benefits, scenic value, and contribution to community character all score highly. Environmental benefits from natural resources are becoming increasingly quantifiable. With the high ranking and the potential for quantifiable documentation, the City should consider researching and developing methods to measure environmental benefits on a site specific and community wide level. Scenic values and contribution to community character relate to aesthetics and, for most citizens, to sense of place. These attributes possibly rank highly due to being so readily identifiable within the community. It is important to further define what is considered of aesthetic quality to the citizens in order to identify and develop strategies for achieving the goals of the community. The ability of a resource to provide products rated low in the survey. This attribute is important to landowners who are faced with increasing property taxes and hard decisions about the future of their land. Parcelization has a major negative impact on natural resources. Large tracts of land provide many ecological benefits that small, unconnected tracts cannot. However, costs of ownership can be cumbersome. The ability to provide economic return can be important in relieving this pressure to sell or divide land. Therefore, natural resources conservation and fragmentation of forestlands from parcelization are directly linked. As site level assessment is done, these various attributes of natural resources could be useful for developing priorities for natural resources conservation.

Land Cover

As mentioned in the results section, forested land ranked highest in terms of conservation priority. This is consistent with the rankings of forested land as having the greatest contribution to community character and having the greatest scenic value. Water also consistently ranked highly in terms of general priority for conservation as well as contribution to community character and scenic value.

Agricultural land ranked consistently lowest for conservation priority. While agricultural lands are an historic part of Lakeland's character, as evidenced by the 1937 aerial photographs, their low ranking must be seen as due, at least in part, to their perceived lack of contribution to community character and scenic value.

Forest Stand Group

Oak-Hickory ranked highest in terms of conservation priority, while Loblolly-Shortleaf Pine ranked lowest. Oak-Hickory forests are a mainstay in West Tennessee and provide the easily identifiable large, spreading trees providing food to wildlife and shade to the visitor. The majority of the pine stand groups within Lakeland are within pine plantations. While these plantations are not genetically diverse, they do provide ecological benefits that aren't found in other groups. However, the LSP stand group makes up a very small percentage of Lakeland's forested land (~3%).

Stand health, percentage of native species, and connectivity all ranked highly as attributes to be considered in conservation prioritization.

- Stand health (or ecological health) relates to the ability of the stand to produce environmental and aesthetic benefits, the health of the native species, and the level of insect and disease activity. As noted in the forest health section of this document, the majority of Lakeland's forests are in need of some form of management to improve forest health. Methods to promote and ensure that forest health management is undertaken should be pursued.
- Percentage of native species relates to stand health and is a measure that was taken indirectly during the NRI. Non-native species can be invasive or non-invasive. However, local wildlife and plant populations are adapted to and with the local native species. The high conservation priority ranking of wildlife habitat (see Table 1) also emphasizes the importance of this attribute of Lakeland's forests. Measures may be warranted to increase the presence of native species.
- Connectivity of forest stands relates to the ability of stands to provide a variety of environmental benefits and to be sustainable long term. Increased connectivity provides improved wildlife habitat as well as habitat for plant genetic dispersal. Habitat connectivity can somewhat lessen the negative impacts of habitat fragmentation. Efforts should be undertaken to ensure that conservation lands are increased in value by connecting to other valuable resource areas.
- Stand origin ranked lowest in terms of conservation priority. This implies that citizens are not concerned whether or not a stand originated from human induced disturbance and planting, nature induced disturbance and natural regeneration, old-field succession, or any other means. More important to the citizens are the attributes of a forest stand.

Other characteristics of forest stands were ranked in terms of conservation priority. In general, hardwood stands ranked higher than softwood stands with mature hardwood stands ranking highest overall.

- Based on previous survey responses, it must be assumed that mature hardwood stands are the stands providing citizens with the highest amount of environmental benefits, scenic value, and community character. As noted in the Forest Health section of this document, much of Lakeland's forests are somewhat young but are moving into the mature hardwood stage. Strategies should be pursued to ensure that these young stands succeed to mature stands through proper management of the forested ecosystem.
- Pine plantations scored lowest in terms of conservation priority. This low scoring is consistent with the relative ranking of the Loblolly-Shortleaf Pine group. This ranking may be due in part to the view of pine plantations as intensive silviculture, or tree farming, similar to more common agricultural activities. Also, pine plantations are harvested more frequently than hardwood stands which may result in negative perceptions of timber harvesting and management.

An important result of the NRA is the discovery that much of Lakeland's forests are in need of some form of active management. While non-management is itself a form of management, it leads to degraded, unhealthy forests incapable of providing the environmental benefits and other attributes valued by the community. The disruption to and prevention of natural disturbance patterns due to human influence can lead to the demise of the very resources sought to be protected. Forest management is needed to recreate the natural disturbance process, to maintain native species that have adapted to and with the site, to limit invasive species, to improve soil characteristics, and to improve forest health and structure all of which increase environmental benefits from and sustainability of the forest. To properly manage forests and other natural resources within the City, public education may be necessary to raise awareness and support of these management activities.

Soils are a critical component of a site's potential to develop natural resources that the community values. They also can be easily and irreparably damaged by erosion and compaction. Of the 8 soil series in Lakeland, the highest-ranking soils in terms of their ability to provide desirable natural resources qualities were those of the Memphis series and all of the Collins series. Memphis soils, when not heavily restricted by slopes and erosion, are the most productive soils in Lakeland. However, once the topsoil is removed, either by erosion or removal, the underlying layer is a non-productive, essentially inert, material. Calloway and Grenada series soils were among the lowest quality in terms of contribution to conservation values but still can produce benefits. The characteristics that limit these two soils were generally found to be the presence of a strong fragipan and limited fertility. All soils within Lakeland are friable and easily compacted. Due to their high erodibility, land disturbance often leads to significant erosion that is difficult to control and results in the degradation of natural resources. Once compacted, the characteristics that allow these soils to contribute to conservation values are lost. Water and air space within the soil, infiltration, percolation, and ability to support root growth are no longer available. The sensitive nature of Lakeland's soils

combined with their critical contribution to site potential indicate that measures to limit disturbance to these soils are critical and should be considered.

Streams, lakes, and wetlands were also ranked for conservation priority during the public survey. Many of these water resources are highly visible and are readily identifiable within the community. The Loosahatchie River, Oliver Creek, Scott's Creek, Clear Creek, and many others flow into and out of the City. Lakes ranging from Garner Lake to small cattle ponds are found throughout the City and wetlands are widely distributed. Lakes and streams both ranked highly in terms of conservation priority most likely due to their high visibility and therefore their high contribution to community character and scenic value. Wetlands scored lower than lakes and streams in terms of conservation priority. However, these resources provide numerous environmental benefits.

It should be noted that of the three types of linear waterways that were identified in the NRI, USGS blueline streams, and TDEC defined streams are the two types of waterways currently regulated by the Lakeland streamside management buffer regulations. It should also be noted that the NWI wetlands locations are areas likely to support wetlands development and that wetlands may occur outside of these high potential areas. Site-specific analyses should be conducted on a case-by-case basis to determine presence or absence and actual boundaries of wetlands. The regulation of wetlands continues to be a function of the US Army Corps of Engineers and the Tennessee Department of Environment and Conservation.

Slopes are one of the factors making Lakeland unique to Shelby County. During the NRI, areas of high percentage slopes were found to be common in Lakeland. These high slopes provide opportunities and challenges to conservation of natural resources. Slopes are directly related o erosion potential, vegetative cover, and provide scenic qualities in Lakeland not found elsewhere in Shelby County.

As mentioned in the Results section, the survey responses to the valuation of slopes were uniformly average and inconsistent with the results of other survey questions leading to the conclusion that this question was not fully understood by the respondents. Examples of conflicting responses include a question where respondents were asked to rank the attributes of natural resources they valued highest. Scenic values and contribution to community character ranked high value. High slope areas, especially those that are contiguous for extensive lengths (or runs) contribute substantially to both of these attributes yet slopes valuation ranked much lower. Also, the majority of respondents ranked steep slopes as a "high priority" for conservation in one question of the survey, yet the majority of respondents ranked the priority for conservation of slopes as "neutral" when those slopes were broken into specific slope percentage categories and slope length categories. Based on these data it is assumed that the citizen survey undervalued steep slopes as a conservation priority within the community. Therefore, at the time that

conservation priority maps are developed, an adjustment to slope valuation should be considered. This adjustment could be based on the responses to the particular attributes of natural resources, that is, scenic value and contribution to community character. The average ranking of these two attributes was 4.22. The adjusted slope rankings may place the highest slope percentage and the longest slope runs as 4.22, the lowest slope percentages and the shortest slope runs as the rankings they were given (3.29 and 3.34 respectively), and the middle slope percentages and middle slope runs as the average difference between the lower and upper rankings (3.75 and 3.78 respectively). See Table 12 below for potential revised valuations.

Slope Categories	Response Average	Unadjusted Valuation	Adjusted Valuation
Moderate Slopes (< 10%)	3.29	65.8	65.8
High Slopes (10% - 20%)	3.61	72.2	75
Very High Slopes (> 20%)	3.55	71	84.4
Short slope length (<100')	3.34	66.8	66.8
Moderate slope length (100-300')	3.55	71	75.6
Long slope length (>300')	3.63	72.6	84.4

Table 12 – potential revisions to slope valuation.

Conclusion

The survey results were generally consistent with public sentiment on natural resources valuation as revealed through various means over the past several years. For example, the Comprehensive Plan update of 2006 indicated a strong preference in the community for forestland protection as well as other natural resources. Further, lakes and streams are important to the community as evidenced by the recent stormwater survey conducted within the City. Also, Lakeland's Tree City USA ® status demonstrates the community's commitment to forest stewardship.

Environmental benefits are highly valued in the community and are becoming increasingly quantifiable. This may lead to future opportunities for cost-benefit analysis of conservation. Scenic value and contribution to community character are important attributes of natural resources. This is logical given the high amount of resources still intact within the City and the high visibility of those resources to residents (adjacent to roadways, near homes, etc.). Currently, the City has an opportunity protect and restore a variety of natural systems that can provide these highly valued environmental benefits while also protecting and enhancing the important attributes of scenic value and community character.

The Natural Resources Assessment will be useful to the City by ensuring that its conservation efforts are consistent with the values of the citizens and designed to achieve the goals of the community.