APPENDIX D – INVENTORY SUMMARY

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INDOOR_INVENTORY_SUMMARY-final

Name	Total Components	Arts and Crafts	Concessions	Food-Vending	Gallery	Gymnasium	Kitchen-Commercial	Kitchenette	Kitchen-Kitchenette	Lobby/Entryway	Multi-purpose	Patio/Outdoor seating	Retail/Pro-shop	Speciality Services
Bond Park Community Center	8			1		2			2		3			
Cary Arts Center	24	9	1		1				1		12			
Cary Senior Center	10	1			1		1				6			1
Green Hope Elementary School	2					2								
Herbert C Young Community Center	6				1	1			1	1	2			
Middle Creek Community Center	3.5					1.5					2			
Page Walker Arts & History Center	15				1				1	1	10	2		
Stevens Nature Center	3				1						1		1	
WakeMed Soccer Stadium	3										3			
	74.5	10	1	1	5	6.5	1	0	5	2	39	2	1	1

APPENDIX:

ALTERNATIVE PROVIDER PARKS AND OPEN SPACE	TOTAL COMPONENTS	GIS ACRES	Backstop, Practice	Ballfield	Basketball	Batting Cage	Complex, Tennis	Concessions	Educational Experience	Event Space	Fitness Course	Garden, Display	Horseshoos	Loop Walk	MP Field, Multiple	MP Field, Small	Natural Area	Open Turf	Open Water	Other - Passive	Passive Node	Picnic Grounds	Playground, Destination	Playground, Local	Shelter, Group	Shelter, Shade	Tennis	Trail, Multi-use	Trail, Primitive	Trailhead	Volleyball	Water Access, Developed	Water Access, General
Apex Community Park	35	3794.4		3	3		1				1			1		2	1		1			6	2		1		6			2	3	1	1
Cedar Fork District Park	8	74													8																		
Crabtree Creek Nature Park	3	135.6															1	1	1														
Crowder District Park	24	**881.4**	**1**						**1**	**1**		**5**		**3**		**1**			**1**			**1**		**2**	**4**						**1**	**2**	**1**
Jordan Lake State Park	40	96923.8								2									2	13		1		3	3			5		2		9	
Lake Crabtree Park	41	**10956**						**1**	**1**	**1**			**3**	**6**				**1**	**1**		**2**	**10**		**2**	**3**	**1**		**1**			**2**	**5**	**1**
Morrisville Community Park	9	382.8		3		1		1								1		1					1			1							
Research Triangle	0	**14293.2**																															
Salem Pond Park	5	75												1			1	1	1														1
Seagrove Farm Park	2	34.8															1		1														
Umstead State Park	38	204456						1	1	1							2	1	3	6	1	2						5	5	4		6	
	205		**1**	**6**	**3**	**1**	**1**	**3**	**3**	**5**	**1**	**5**	**3**	**11**	**8**	**4**	**6**	**5**	**11**	**19**	**3**	**20**	**3**	**7**	**11**	**2**	**6**	**11**	**5**	**8**	**6**	**23**	**4**

APPENDIX:

ALTERNATIVE PROVIDER INDOOR FACILITY	TOTAL COMPONENTS	Childcare/Preschool	Fitness/Dance	Food - Full Service	Gymnasium	Kitchen - Kitchenette	Multi-purpose	Pool, Lap	Pool, Leisure	Pool, Therapy	Racquetball	Retail/Pro-shop	Sauna/Steam	Track - Indoor	Weight/Cardio Equipment
Apex Community Center	7				2	1	4								
Carolina Preserve	4					1	1	1							1
Jordan Lake Visitor Center	1						1								
Kraft Family YMCA	7	1			1		2						1	1	1
Morrisville Community Center	7						2	1	1		2				1
Triangle Aquatic Center Indoor	7		1	1			1	1	1	1		1			
YMCA	11	1			1		3	1			2		1	1	1
	44	**2**	**1**	**1**	**4**	**2**	**14**	**4**	**2**	**1**	**4**	**1**	**2**	**2**	**4**

Town of Cary Outdoor Inventory

Name	Ballfield	Basketball	Batting Cage	Complex, Ballfield	Complex, MP Field	Complex, Tennis	Concessions	Disk Golf	Dog Park	Educational Experience	Event Space	Fitness Course	Garden, Community	Garden, Display	Horseshoes	Loop Walk	MP Field, Large	MP Field, Small	Multiuse Court	Natural Area	Open Turf	Open Water	Other -Active	Passive Node	Picnic Grounds	Playground, Destination	Playground, Local	Public Art	Restroom	Shelter	Shelter, Group	Shelter, Shade	Skate Park	Tennis	Track, Competition	Trail, Multi-use	Trail, Primitive	Trailhead	Volleyball	Water Access, Developed	Water Access, General
Annie L. Jones Park	1	2																								1			1			1		6				1			
Black Creek Greenway Trailhead																																						1			
Cary High School	2																1																		1						
Cary Tennis Park						1	2														1		1						2			1		33							
Davis Drive Park		1														1	4									1			1		1							1			
Davis Drive School Park	2																2	1			1									1					2						
Dorothy Park																								1																	
Fred G Bond Metro Park	7			1			1			1	1	1	1	1	5						2	1		1	5	1		1	4	1	3	1					3	1		1	
Green Hope Elementary School/Park		1														1	3			1						1			1		1								4		
Green Hope High School/Park	3	2															2	2											1						1						
Harold D. Ritter Park	2	1																		1	1					1			1		1					1		1			
Heater Park																								1																	
Hemlock Bluffs Nature Preserve										1				1						1								1			1						1				
Koka Booth Amphitheatre							2				1									1								2	2		1										1
Lexie Lane Park	1	1																									1														
Lions Park	2																			1									1		1										
MacDonald Woods Park		1																		1	1				1		1	1													
Marla Dorrel Park		1														1			1	1	1				1	1		4	1		1							1			
Middle Creek School/Park	4	2		1		1	1	1								2	4									1			1		1			8							
Mills School/Park	1	1															3		1								1		1		1				1						
North Cary Park		2															1			1	1		1		5	1					1					1		1	4		
Preston Soccer Fields																	2																								
Robert V. Godbold Park		2				1	1		1											1							1	1				1	1	6			1	1			
Rose Street Park		1																									1														
R.S. Dunham Park		2																		1			1		1		1		1		1			5							
Sears Farm Road Park		1														1				1	1			5	1	1		2	1			3					1				
Thomas E. Brooks Park USA Baseball NTC	8	2	2	2			2									1	2			1						1			1	1	1										
Urban Park		1																									1														
WakeMed Soccer Park					1		4										6	1				1	1					1													
Walnut Street Park										1						1				1	1			2	1		1	1		2											
White Oak Park		1																	1	1	2						1		1		1	1									
	33	25	2	4	1	3	13	1	1	3	2	1	1	2	5	8	30	4	3	14	12	2	4	10	15	10	9	14	21	5	16	8	1	58	5	2	6	8	8	1	1

APPENDIX E - COMPOSITE VALUES METHODOLOGY (CVM) FOR LEVEL OF SERVICE ANALYSIS

A. Level of Service Analysis

Analysis of the existing parks, open space, trails, and recreation systems are often conducted in order to try and determine how the systems are serving the public. A Level of Service (LOS) has been typically defined in parks and recreation master plans as the capacity of the various components and facilities that make up the system to meet the needs of the public. This is often expressed in terms of the size or quantity of a given facility per unit of population.

Brief History of Level of Service Analysis

In order to help standardize parks and recreation planning, universities, agencies and parks and recreation professionals have long been looking for ways to benchmark and provide "national standards" for how much acreage, how many ballfields, pools, playgrounds, etc., a community *should* have. As examples, in 1906 the fledgling "Playground Association of America" called for playground space equal to 30 square feet per child. In the 1970's and early 1980's, the first detailed published works on these topics began emerging (Gold, 1973, Lancaster, 1983). In time "rule of thumb" **capacity** ratios emerged with 10 acres of parklands per thousand population becoming the most widely accepted standard application. Other normative guides also have been cited as "traditional standards," but have been less widely accepted. In 1983, Roger Lancaster compiled a book called, "Recreation, Park and Open Space Standards and Guidelines," that was published by the National Park and Recreation Association (NRPA). In this publication, Mr. Lancaster centered on a recommendation "that a park system, at minimum, be composed of a core system of parklands, with a total of 6.25 to 10.5 acres of developed open space per 1,000 population (Lancaster, 1983, p. 56). The guidelines went further to make recommendations regarding an appropriate mix of park types, sizes, service areas, and acreages, and standards regarding the number of available recreational facilities per thousand population. While the book was published by NRPA and the table of standards became widely known as "the NRPA standards," for Level of Service Analysis, **It is important to note that these standards were never formally adopted for use by NRPA**.

Since that time, various publications have updated and expanded upon possible "standards," several of which have also been published by NRPA. Many of these publications did benchmarking and other normative research to try and determine what an "average LOS" should be. It is important to note that NRPA and the prestigious American Academy for Park and Recreation Administration, as organizations, have focused in recent years on accreditation standards for agencies, which are less directed towards outputs, outcomes and performance, and more on planning, organizational structure, and management processes. The following table gives some of the more commonly and historically used "capacity standards".

Common Historically-Referenced LOS Capacity "Standards"

Activity/ Facility	Recommended Space Requirements	Service Radius and Location Notes	Number of Units per Population
Baseball Official Little League	3.0 to 3.85 acre minimum 1.2 acre minimum	¼ to ½ mile Unlighted part of neighborhood complex; lighted fields part of community complex	1 per 5,000; lighted 1 per 30,000
Basketball Youth High school	2,400 – 3,036 vs. 5,040 – 7,280 s.f.	¼ to ½ mile Usually in school, recreation center or church facility; safe walking or bide access; outdoor courts in neighborhood and community parks, plus active recreation areas in other park settings	1 per 5,000
Football	Minimum 1.5 acres	15 – 30 minute travel time Usually part of sports complex in community park or adjacent to school	1 per 20,000
Soccer	1.7 to 2.1 acres	1 to 2 miles Youth soccer on smaller fields adjacent to larger soccer fields or neighborhood parks	1 per 10,000
Softball	1.5 to 2.0 acres	¼ to ½ mile May also be used for youth baseball	1 per 5,000 (if also used for youth baseball)
Swimming Pools	Varies on size of pool & amenities; usually ½ to 2-acre site	15 – 30 minutes travel time Pools for general community use should be planned for teaching, competitive & recreational purposes with enough depth (3.4m) to accommodate 1m to 3m diving boards; located in community park or school site	1 per 20,000 (pools should accommodate 3% to 5% of total population at a time)
Tennis	Minimum of 7,200 s.f. single court area (2 acres per complex	¼ to ½ mile Best in groups of 2 to 4 courts; located in neighborhood community park or near school site	1 court per 2,000
Volleyball	Minimum 4,000 s.f.	½ to 1 mile Usually in school, recreation center or church facility; safe walking or bide access; outdoor courts in neighborhood and community parks, plus active recreation areas in other park settings	1 court per 5,000
Total land Acreage		Various types of parks - mini, neighborhood, community, regional, conservation, etc.	10 acres per 1,000

Sources:

David N. Ammons, Municipal Benchmarks - Assessing Local Performance and Establishing Community Standards, 2nd Ed., 2002

Roger A. Lancaster (Ed.), *Recreation, Park and Open Space Standards and Guidelines* (Alexandria, VA: National Recreation and Park Association, 1983), pp. 56-57.

James D. Mertes and James R. Hall, *Park, Recreation, Open Space and Greenways* Guidelines, (Alexandria, VA: National Recreation and Park Association, 1996), pp. 94-103.

In conducting planning work, it is important to realize that the above standards can be valuable when referenced as "norms" for capacity, but not necessarily as the target standards for which a community should strive. Each community is different and there are many varying factors which are not addressed by the standards above. For example:

- Does "developed acreage" include golf courses"? What about indoor and passive facilities?
- What are the standards for skateparks? Ice Arenas? Public Art? Etc.?
- What if it's an urban land-locked community? What if it's a small town surrounded by open Federal lands?
- What about quality and condition? What if there's a bunch of ballfields, but they haven't been maintained in the last ten years?
- And many other questions….

B. GRASP® Composite-Values Method (CVM) for Level of Service Analysis

In order to address these and other relevant questions, a new methodology for determining Level of Service was developed. It is called a **Composite-Values Methodology** (CVM) and has been applied in many communities across the nation since 2001, to provide a better way of measuring and portraying the service provided by parks and recreation systems. Primary research and development on this methodology was funded jointly by GreenPlay, LLC, a management consulting firm for parks, open space and related agencies, Design Concepts, a landscape architecture and planning firm, and Geowest, a spatial information management firm. While Composite-Values Methodology can be utilized by anyone, the proprietary trademarked name for the **CVM process** that these three firms use is called **GRASP® (Geo-Referenced Amenities Standards Process).** The **GRASP®** name for the methodology for analysis is proprietary, but the CVM process is generic and the software used is common and typical for most agencies. The data and information collected is owned and can be updated and managed by the agency for ongoing usage.

For CVM analysis, capacity is only part of the LOS equation. Other factors are brought into consideration, including *quality*, *condition*, *location*, *comfort*, *convenience*, and *ambience*. To create GRASP® inventory and analysis, parks, trails, recreation, open space and any other relevant amenities and properties being studied are looked at as part of an overall infrastructure for a community made up of various components, such as playgrounds, multi-purpose fields, passive areas, etc. The methodology inventories characteristics that are part of the context and setting of a component. They are not characteristics of the component itself, but when they exist in proximity to a component they enhance the value of the component.

The characteristics of components include:

Quality – The service provided by anything, whether it is a playground, soccer field, or swimming pool is determined in part by its quality. A playground with a variety of features, such as climbers, slides, and swings provides a higher degree of service than one with nothing but an old teeter-totter and some "monkey-bars."

Condition – The condition of a component within the park system also affects the amount of service it provides. A playground in disrepair with unsafe equipment does not offer the same service as one in good condition. Similarly, a soccer field with a smooth surface of well-maintained grass certainly offers a higher degree of service than one that is full of weeds, ruts, and other hazards.

Functionality – Functionality is a measure of how well something serves its intended purpose, and is a result of its quality and condition.

Location – To receive service from something, you need to be able to get to it. Therefore, service is dependent upon proximity and access. All components are geographically located using GPS coordinates and GIS software.

Comfort – The service provided by a component is increased by having amenities. For example, outdoor components are often enhanced by attributes such as shade, seating, and a restroom nearby. Comfort enhances the experience of using a component.

Convenience – Convenience encourages people to use a component, which increased the amount of service that it offers. Easy access and the availability of trash receptacles, bike rack, or nearby parking are examples of conveniences that enhance the service provided by a component.

Ambience – Simple observation will prove that people are drawn to places that "feel" good. This includes a sense of safety and security, as well as pleasant surroundings, attractive views, and a sense of place. For example, a well-designed park is preferable to poorly-designed one, and this enhances the degree of service provided by the components within it.

Capacity is still part of the LOS analysis and the quantity of each component is recorded as well. By combining and analyzing the composite values of each component, it is possible to measure the service provided by a parks and recreation system from a variety of perspectives and for any given location. Typically this begins with a decision on **"relevant components**" for the analysis, collection of an accurate inventory of those components, analysis and then the results are presented in a series of maps and tables that make up the analysis of the study area.

Data for Analysis and Making Justifiable Decisions

All of the data generated from the GRASP® evaluation is compiled into an electronic database that is then available and owned by the agency for use in a variety of ways. The database can help keep track of facilities and programs, and can be used to schedule services, maintenance, and the replacement of components. In addition to determining LOS, it can be used to project long-term capital and life-cycle costing needs. All portions of the information are in standard available software and can be produced in a variety of ways for future planning or sharing with the public.

It is important to note that CVM analysis provides not only accurate LOS and facility inventory information, but also works with and integrates with other tools to help agencies make decisions. It is relatively easy to maintain, updatable, and creates easily understood graphic depictions (analysis maps and/or "Perspectives") of issues. Combined with a needs assessment, public and staff involvement, program and financial assessment, CVM analysis allows an agency to defensibly make recommendations on priorities for ongoing resource allocation along with capital and operational funding.

C. Inventory Data Collection Process

A detailed inventory of relevant components for the project is conducted. The inventory locates and catalogues all of the relevant components for the project, and evaluates each one as to how well it was serving its intended function within the system. The planning team first prepares a preliminary list of existing components using aerial photography and the community's Geographic Information System (GIS). Components identified in the aerial photo are given GIS points and names according to a list of standard components.

Next, field visits are conducted by the consulting and project team staff to confirm the preliminary data and collect additional information. Additionally indoor facilities are scored and for the purposes of this study, each relevant space is considered a component and is scored based on its intended function. During the field visits and evaluations, any missing relevant components are added to the data set, and each component is evaluated as to how well it meets expectations for its intended function. During the site visits the following information is collected:

- Component type and location
- Evaluation of component functionality
- Evaluation of comfort and convenience features
- Evaluation of park design and ambience
- Site photos and general comments

After the inventory is completed, it is given to the project team for final review and approval for accuracy.

D. Standardized Process for Scoring Components

Component Scoring

The approved inventory is the basis for the creation of values used in analysis. Each component received a functionality score that is related to the quality, condition, and ability of the space to meet operational and programming needs.

For the GRASP® process, the range of scores for each component is as follows:

- **Below Expectations (BE)** – The component does not meet the expectations of its intended primary function. Factors leading to this may include size, age, accessibility, or others. Each such component is given a score of **1** in the inventory.
- **Meeting Expectations (ME)** – The component meets expectations for its intended function. Such components are given scores of **2.**
- **Exceeding Expectations (EE) –** The component exceeds expectations, due to size, configuration, or unique qualities. Such components are given scores of **3.**
- If the feature exists but is not useable because it is unsafe, obsolete, or dysfunctional, it may be listed in the feature description, and assigned a **score of zero (0).**

If a feature is used for multiple purposes, such as a softball field that is also used for T-Ball or youth soccer games, it is scored only once under the description that best fits the use that for which the component is designed.

Neighborhood and Community Scoring

Components are evaluated from two perspectives: first, the value of the component in serving the immediate neighborhood, and second, its value to the entire community.

Neighborhood Score

Each component is evaluated from the perspective of a resident that lives nearby. High scoring components are easily accessible to pedestrians in the neighborhood, are attractive for short and frequent visits, and are unobtrusive to the surrounding neighborhood. Components that do not have a high neighborhood score may not be located within walking distance of residents, may have “nuisance features” such as sports lighting, or may draw large crowds for which parking is not provided.

Community Score

Additionally each component is evaluated from the perspective of residents in the community as a whole. High scoring components in this category may be unique components within the parks and recreation system, have a broad draw from throughout the community, have the capacity and associated facilities for community-wide events, or are located in areas that are accessible only by car.

Indoor Components
Indoor components are generally thought to be accessible to the entire community, partially because it is often not financially feasible to provide indoor facilities at a walking distance from every distance from each residence. Additionally indoor facilities often provide programs and facilities that are geared to the community as a whole, or in larger communities, are intended for a region of the community. For these reasons, unless a detailed indoor analysis is completed, indoor facilities are given only one score.

Modifiers (Comfort and Convenience Features) Scoring

Outdoor Modifiers
Besides standard components, this inventory also evaluates features that provide comfort and convenience to the users. These are things that a user might not go to the parks specifically to use, but are things that enhance the users' experience by making it a nicer place to be and include: drinking fountains, seating, BBQ grills, dog stations, security lighting, bike parking, restrooms, shade, connections to trails, park access, parking, picnic tables, and seasonal and ornamental plantings. These features are scored as listed above with the 1-3 system. In this case it is not important to get a count of the number or size of these components; instead the score should reflect the ability of the item to serve the park.

Indoor Modifiers
For indoor facilities the comfort and convenience features change slightly to reflect the characteristics of the building. Building modifier categories include: site access, setting aesthetics, building entry function, building entry aesthetics, overall building condition, entry desk, office space, overall storage, and restrooms and/or locker rooms.

Activity and Sports Lighting
This modifier accounts for lighting that allows for component use in the evening/night hours and is applied to the quantity of the component as it affectively expands the capacity of the component. This modifier does not apply to security lighting.

Shade
Like Activity and Sports lighting, shade can be added to outdoor components to extend use beyond normal hours or seasons.

Design and Ambience Scoring

Using the same rating system that is used for components and modifiers, the quality of Design and Ambience is scored. Good design not only makes a place look nice, it makes it feel safe and pleasant, and encourages people to visit more often and stay longer

Trails and Greenways Scoring

Trails and/or greenways can be scored as independent parcels or as individual components within another parcel. The former type of trail receives its own set of scores for modifiers and design and ambiance. The trail in the latter situation takes on the modifiers and design and ambiance of the larger park in which it resides. Multi-use trails are assumed to consist of three components including one active component, one passive component, and the parcel itself. Because traveling the length of any given trail is time consuming, trail information is often collected with the aid of staff.

For the purposes of most studies, a list of trails is obtained to provide a reasonable dataset that offers some park and recreational value to the public. While no specific listing of components at each greenway or trail is generated, it is assumed that each greenway provides a value equivalent to three (3) components. Think of these as one active component (walking, running, biking, etc.), one passive component (quiet contemplation along the trail), and one experiential component (observing nature, perhaps art and interpretive signage).

These three components and the parcel are assumed to be meeting the expectations (scores 2) of the community in the same way that park components meet expectations. The other parts to the GRASP® score relate to the comfort and design of the location, and are called modifiers. The aesthetic and recreational standards for greenways are typically similar to those for parks, so modifiers at greenways are generally assigned a value of meeting expectations (score 2). Multi-use trails that typically are adjacent to major roads are assumed to have less aesthetic and recreational standards and are therefore assigned a value of below expectations (score 1). The final component in the GRASP® score is the ownership modifier. This is a percentage that is applied to the score that relates to the general public's ability to access the facility.

This translates into the following formula for calculating the GRASP® score:

Trails or Greenway Scoring

(Component number + Parcel) x Component score x (Comfort x Design) x ownership = GRASP® score or
(3 +1) x 2 x 2.2 x 1 = 17.6

Multi-Use Trail Scoring
(Component number + Parcel) x Component score x (Comfort x Design) x ownership = GRASP® score or
(3 +1) x 2 x 1.1 x 1 = 8.8

In the GRASP® Perspectives t, that value is assigned to the location where each trail is found and buffered accordingly. This value also is included in computations for the GRASP® Indices that are calculated along with each Perspective.

Ownership Modifier

This modifier is generally weighted with a percentage that is applied to the GRASP® score after other modifiers have been applied. It accounts for access and control of components that are provided by alternative providers. For example, in most cases components that are owned and managed by schools are given a 50% weighted ownership modifier, which halves the GRASP® score to account for the limited access that the neighborhood has to school facilities (it's only open to the public outside of school hours).

E. Calculating GRASP® Functional Scores

Once the components are inventoried and scored, calculations can be made for any combination of components to derive average scores, scores per combinations of various components, scores per sub-areas, etc., depending on the key issues being studied and objectives for the project. These are very helpful for analyzing area comparisons and setting of target scores for component service and agency target standards.

For example, a total composite GRASP® score for each individual component is determined by using the following formula:

(total component score) x (adjusted modifier score) x (design and ambiance score) x (ownership modifier) = Composite GRASP® Score

These individual scores can be additively combined in various ways to examine service from various subsets of the agency's system.

F. GRASP® Perspectives and Target Threshold Scores

GRASP® scores are often used to create analysis maps to show how the study area is being served for parks and recreation benefits. These maps are called Perspectives, because each one provides a certain perspective on the way service is being provided. Types of Perspectives include heat maps, threshold maps, and composition maps, as well as others.

On heat maps, the numerical value of LOS available to a person at any given location is represented by an orange tone. Where the tone is darker, the available LOS is higher. Locations on the map with no orange tone (i.e a grey tone) have no service. Heat maps can be produced from any set of components in the inventory. For example, if the intent is to measure the relative LOS available for seniors, then a heat map can be generated using only those components in the inventory that relate to seniors.

Heat maps can be further analyzed to determine where the LOS on them falls above or below a certain threshold. The threshold may vary, and can be set to represent an assumed "target" value for LOS, or can be the median, average, or other value for the Perspective. On the threshold maps, colors are used to show whether any given location is above or below the threshold value.

The types of Perspectives used to analyze and depict the community's LOS will depend upon the key issues being studied.

Typical and Standard GRASP® Perspectives
Below are some types of Perspectives typically used to analyze service in an area.

Neighborhood Composite

This Perspective depicts service from a neighborhood point of view. Multiple buffers (or "catchment areas") are used to reflect multiple ways of travelling to reach components. The threshold for this Perspective is typically the value that results from being within 1/2 mile of 4 recreation components and one recreational trail.

Walkability (same as Neighborhood Composite but with only 1/2 mile buffers)

The threshold scores for this Perspective are normally the same as for the Neighborhood Composite.

Perspectives showing Neighborhood LOS for one component

The threshold here is equivalent to being within 1/2 mile of the selected component, and assumes that the component, modifiers, and design and ambiance are meeting expectations.

Note: Aside from meeting a single goal, the mix of components also needs to be considered. For example, a home that is within 1/2 mile of four tennis courts and no other amenities would meet the basic numeric standard, but not the intent of the standard. Composition analyses are another type of Perspective that is used to analyze the mix of options available to residents.

On a composite map, selected components are grouped into categories and the map shows how many categories are represented by at least one component within a given proximity to any location on the map.

G. GRASP® Project Technical Standards for GIS Data

The GRASP® Team utilizes the most up to date computer hardware and software to produce and enhance project-based GIS data. The following technical details are standard with all GRASP® Team projects.

- All GRASP® Team GIS workstations employ Microsoft® Windows® operating systems. All project files conform to PC-based architecture and extension naming standards.
- The GRASP® Team employs ESRI® ArcGIS™ 9.3 for all GIS applications. Final project GIS data is submitted to the client in Microsoft® Access™-based Geodatabase (*.mdb) Feature Class format and/or Shapefile (*.shp/*.dbf/*.shx) format. ArcMap™ Layer files (*.lyr) are submitted to ease client replication of all project map legend formats. The GRASP® Team will not resubmit original client source data that has not undergone enhancement.
- All final GIS datasets (deliverables) area submitted to the client using the geographic coordinate system(s) from the original client source data. The GRASP® team will assign a coordinate system that is most appropriate for the client location if the client does not require a predetermined standard coordinate system. Most GRASP® project data is submitted in State Plane Coordinates (Feet) with a NAD83/NAD83 HARN datum.
- All GRASP® Perspectives and Resource Maps (deliverables) are submitted to the client in standard PDF and JPEG formats. The project PDFs are high resolution, print-ready files for scalable print operations. Most project map-based PDFs are 300dpi, 36”x54” images. The project JPEGs are lower resolution digital presentation-ready files for insertion into Microsoft® Office® productivity suite applications – MS Word®, MS Power Point®, etc. Most project map-based JPEGs are 300dpi 4”x6” images.

Project Deliverables and Future Use
All information and deliverables are transmitted "as-is" to fulfill specific tasks identified in a scope of services for a contract. While these may be useful for other purposes, no warranties or other assurances are made that the deliverables are ready for such use. The database can be modified to add, change, or delete information as needed by personnel trained in use of these standard software applications. For example, if new parks or facilities are constructed, the components of these may be added to the database to keep it current. The database may also be queried in a variety of ways to produce tables, charts, or reports for use in operations, management, and planning or other agency tasks. Such modification, updating, reformatting, or other preparation for other purposes is the sole responsibility of the client.

Similarly, the database information can be used to prepare a variety of maps and analysis perspectives using GIS software. Such use by the client is beyond the scope of a single contract, and no warranties or assurances are made that the deliverables are ready or intended for such future use. If desired, the GRASP® Team can make such modifications, and/or prepare additional or updated maps or Perspectives upon request for a negotiated fee.

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APPENDIX F: CARY INVENTORY & LEVEL OF SERVICE ANALYSIS

This Appendix provides an overview and analysis of the parks, recreation, trails, and open space system in Cary, North Carolina. First, the inventory collection process and level of service methodology is described. Next, an overview of the inventory is provided, including municipal facilities and key alternative providers. Finally, the service provided by the parks, recreation, trails, and open space system is analyzed.

A. INVENTORY

The inventory conducted for this Master Plan includes both municipal assets and those of other providers. The inventory was used to assess the park and recreation services available to residents so that plans could be formulated for maintaining, enhancing, and sustaining levels of service now and into the future.

1. Inventory Overview and Methodology

Existing Infrastructure

The parks and recreation system can be thought of as an infrastructure that serves the health and well-being of people. This infrastructure is made up of parts that are combined in various ways to provide service. At the larger scale, individual parks, trails, open space parcels, or indoor facilities form the basic building blocks of the system. However, each of these can be broken down as well into individual components, such as playing fields, interpretive features, or meeting rooms. For this project, a very complete and thorough database of amenities was developed related to the provision of parks and recreation facilities. All of the individual components within the system were evaluated and recorded into the inventory dataset.

The inventory was conducted in June, 2011. The inventory for this project included all of the properties and facilities managed and owned by the Town as well as alternative providers. Alternative providers include elementary, middle, and high schools, as well as the state, county, and surrounding municipalities.

The inventory process consisted of field visits to each of the outdoor sites and indoor facilities. A complete list of all facilities and components is provided in ***Appendix D***. This inventory Information has been entered into a geo-database for analytical uses and ongoing management tasks.

Alternative provider inventory data was collected by several methods, including site visits, using GIS data attributes, aerial photography and consulting directories, or as provided by Town staff.

The purpose of the inventory was to get a complete and accurate picture of the recreational opportunities available to residents. Information was collected on the indoor and outdoor facilities identified above and included the location of the facilities and the components at each location.

For the purposes of this study, *components* are generally defined as features provided for the purpose of a recreational experience for visitors. This includes fields, courts, and other spaces used for organized activities, as well as open turf, natural areas, and features that offer passive or non-programmed recreational experiences. The inventory includes an assessment of the functionality of each component.

For each site or facility, an assessment was also made of factors that enhance or detract from the functionality of its components. These are "comfort and convenience" elements, including the availability of adequate shade, seating, parking, restrooms, etc. The overall design and ambience of the site or facility was also assessed, including such things as good design, pleasing surroundings, etc.

Composite-Values Level of Service Analysis

A methodology known as Composite-Values Level of Service Analysis was used to assess the level of service provided by the current park system. A trademarked proprietary version of composite-values methodology developed by the consultants for this project, GreenPlay and Design Concepts, was utilized. It is called **Geo-referenced Amenities Standards Process (GRASP®)**. A detailed explanation of this methodology can be found in ***Appendix E***.

In summary, each relevant component was located, counted, and assessed on its functionality for its primary intended use. A GRASP® score was assigned to the component as a measure of functionality as follows:

- **Below Expectations –** The component does not meet the expectations of its intended primary function. Factors leading to this may include size, age, accessibility, or others. Each such component was given a **score of one (1)** in the inventory.

- **Meeting Expectations –** The component meets expectations for its intended function. Such components were given a **score of two (2).**

- **Exceeding Expectations –** The component exceeds expectations, due to size, configuration, or unique qualities. Such components were given a **score of three (3).**

- If the feature exists but is not useable because it is unsafe, obsolete, or dysfunctional, it may be listed in the feature description and assigned a **score of zero (0) or in rare cases even a negative score (-1).**

It is important to note that these scores are based on local expectations and norms, and not on comparisons to some national average or standard. It is the opinion of the consultants that if Cary's facilities were evaluated in comparison to "typical" facilities found in their work across the country, the scores would be higher. But the intent of this analysis is to evaluate Cary's facilities against its own expectations and standards. Therefore, if a component scores a "2" in this analysis, that indicates that it is meeting expectations <u>for Cary</u>, and not for the typical American community.

Components were evaluated according to this scale from two viewpoints. First is the value of the component in serving the immediate neighborhood, and second, its value to the entire community.

In some cases, components were counted cumulatively within a park or facility. In such cases the component was evaluated according to the *experiences* provided. For example, rather than recording each individual piece of art within a park, a single value was given for art *as an experience* within the park. This was also done for historical, cultural, and educational experiences offered within parks.

Next, amenities that relate to and enhance the component were evaluated. The setting for a component and the conditions around it affect how well it functions, so in addition to scoring the components, each **parcel** or **indoor facility** was given a set of scores to rate its comfort and convenience to the user. This includes such things as the availability of restrooms, drinking water, shade, scenery, etc.

Lastly, the overall design and ambiance of the facility or park was recorded as a part of the inventory. Characteristics such as overall layout, attention to design, and functionality inform the design and ambiance score.

The assessment findings from each location were entered into a master inventory database/spreadsheet. The database serves as a record of the inventory and was also used to perform the GRASP® analysis that follows.

B. INVENTORY DESCRIPTION

The inventoried properties owned or managed by the Town of Cary and alternative providers include state parks, regional parks and adjacent community parks within a one-mile radius of the Town of Cary limits. Overall, 562 components were identified during the inventory process among all providers – 353 of these components are owned or managed by the Town of Cary.

Table 17: Town of Cary Inventory Summary

Component	Quantity
Ball Diamonds	33
Basketball Courts (full court equiv.)	25
Multi-Purpose Fields	34
Open Turf	12
Picnic Grounds	16
Picnic Shelters	29
Playgrounds	20
Event Space	3
Tennis Courts	58
Water Access	2

1. Facility Descriptions

The lands and facilities within Cary range from developed parks to large natural areas and include a variety of trail types and facilities for indoor recreation. These offer a wide variety of components and amenities. Opportunities for active recreation range from team sports like softball, soccer and football to individual sports such as skateboarding and tennis. Passive activities such as picnicking and wildlife watching are also accommodated.

Cary is notable for several unique facilities located within the Town. These are "venue" type facilities that are state-of-the-art. They include the Koka Booth Amphitheater, the Cary Tennis Park, WakeMed Soccer Park, USA Baseball Center in Tom Brooks Park, and the new Cary Arts Center.

Detailed information on facilities and components can be found in the Project Atlas that was compiled as part of this master plan effort and in the GIS database that was created.

Outdoor Facilities

Parks
Cary has a wide range of facilities that all contribute to the overall park system. The system consists of multi-purpose parks that serve a variety of users, such as Fred G. Bond Park and facilities with more specialized purposes such as the Koka Booth Amphitheater, as well as smaller neighborhood facilities such as Rose Street Park.

Cary's parks tend to be well-planned and cared for, and highly-functioning. They exhibit a high degree of sophistication in their design, including skilled use of plants for screening, shade, and interest. Structures, furnishings, and equipment typically are well-fitted for their intended purposes, as well as being aesthetically pleasing. This level of quality sets high expectations that are generally met in all of Cary's parks, with a few exceptions. For example, Lexie Lane Park is considered by some to fall below the level expected for parks in Cary. However, in most other communities, this park would not be considered sub-standard at all. This is a testament to the high standards that Cary sets for itself and accomplishes.

Trails
Approximately 63 miles of trails were included in the inventory. Some trails are contained within the extent of individual parks and some meander through the area and connect parks and open space to homes and businesses. Like its parks and other facilities, Cary's trails are well-planned and maintained for the most part.

Open Space
Many of Cary's parks include natural areas. Fred G. Bond Park is a good example of this. Hemlock Bluffs nature preserve provides a large natural area with naturalized trails and educational features.

Classification	Name	Acres	Ballfield	Basketball	Batting Cage	Complex, Ballfield	Complex, MP Field	Complex, Tennis	Concessions	Disk Golf	Dog Park	Educational Experience	Event Space	Fitness Course	Garden, Community	Garden, Display	Horseshoes	Loop Walk	MP Field, Large	MP Field, Small	Multiuse Court	Natural Area	Open Turf	Open Water	Other -Active	Other, Active	Other-Active	Passive Node	Picnic Grounds	Playground, Destination	Playground, Local	Public Art	Shelter	Shelter, Group	Shelter, Shade	Skate Park	Tennis	Track, Competition	Trail, Multi-use	Trail, Primitive	Trailhead	Trails, Primitive	Volleyball	Water Access, Developed	Water Access, General
Community Park																																													
	Harold D. Ritter Park	34.7	2	1																		1	1							1				1					1		1				
	Middle Creek School/Park	166.9	4	2		1		1	1	1								2	4											1				1			8								
	North Cary Park	60.8		2															1			1	1			1			5	1				1					1		1		4		
	Thomas E. Brooks Park USA Baseball NTC	224.3	8	2	2	2			2									1	2			1								1			1	1											
Metro Park																																													
	Fred G Bond Metro Park	274.9	7			1			1			1	1	1	1	1	5						2	1				1	5	1		1	1	3	1					1	1	2		1	
Mini Park																																													
	Dorothy Park	0.8																										1																	
	Heater Park	1.5																										1																	
	R.S. Dunham Park	5.6		2																		1				1			1		1		1			5									
	Urban Park	1.1		1																											1														
Neighborhood Park																																													
	Annie L. Jones Park	9.8	1	2																										1					1		6				1				
	Davis Drive Park	15.7		1														1	4											1				1							1				
	Green Hope Elementary School/Park	15.4		1														1	3			1								1				1									4		
	Lexie Lane Park	2.7	1	1																											1														
	Lions Park	6.1	2																			1												1											
	MacDonald Woods Park	14.1		1																		1	1						1		1	1													
	Marla Dorrel Park	17.5		1														1			1	1	1						1	1		4		1							1				
	Robert V. Godbold Park	24.6		2				1	1		1											1									1	1			1	1	6			1	1				
	Rose Street Park	0.6		1																											1														
	Sears Farm Road Park	12.9		1														1				1	1					5	1	1		2			3					1					
	White Oak Park	11.8		1																	1	1	2								1			1	1										
Special Use Facility																																													
	Black Creek Greenway Trailhead	1.2																																							1				
	Cary High School	39	2																1																		1								
	Cary Tennis Park	18.5						1	2														1		1										1		33								
	Davis Drive School Park	55.4	2																2	1			1										1					2							
	Green Hope High School/Park	72.5	3	2															2	2																		1							
	Hemlock Bluffs Nature Preserve	139.8										1				1						1										1		1						1					
	Koka Booth Amphitheatre	14.1							2				1									1										2		1											1
	Mills School/Park	195.8	1	1															3		1										1			1				1							
	Preston Soccer Fields	15																	2																										
	WakeMed Soccer Park	163.3					1		4										6	1				1			1						1												
	Walnut Street Park	12.7										1						1				1	1					2	1		1	1	2												
Totals:																																													
		1629.1	33	25	2	4	1	3	13	1	1	3	2	1	1	2	5	8	30	4	3	14	12	2	1	2	1	10	15	10	9	14	5	16	8	1	58	5	2	4	8	2	8	1	1

Indoor Facilities

Indoor facilities range from specialized facilities such as the Stevens Nature Center in Hemlock Bluffs preserve to multi-purpose facilities such as the Herbert Young Center, which has a gym and multi-purpose rooms. The Page Walker Arts and History Center offers space for meetings, classes, and other activities in a historic setting, and the new Cary Arts Center offers a full range of facilities for performing and visual arts in a spacious, centrally-located historic schoolhouse.

INDOOR FACILITY													
			Concessions	Food-Vending	Gallery	Gymnasium	Kitchen-Commercial	Kitchen-Kitchenette	Lobby/Entryway	Multi-purpose	Patio/Outdoor seating	Retail/Pro-shop	Speciality Services
	Bond Park Community Center			1		2		2		3			
	Cary Arts Center		1		1			1		12			
	Cary Senior Center				1		1			6			1
	Green Hope Elementary School					2							
	Herbert C Young Community Center				1	1		1	1	2			
	Jordan Hall Arts Center				1			1		6			
	Middle Creek Community Center					2				2			
	Page-Walker Arts & History Center				1			1	1	10	2		
	Stevens Nature Center				1					1		1	
	WakeMed Soccer Stadium									3			
Totals:													
			1	1	6	7	1	6	2	45	2	1	1

2. Alternative Provider Inventory Description

Alternative providers included in the inventory and used in the calculations for Level of Service include state parks, regional parks, and adjacent community parks. (See Alternative Provider Inventory in ***Appendix D***.) In each case, the GRASP® scoring system is used and assumptions are made based on the typical condition and accessibility of the component. Some other providers were mapped but not scored or used in the LOS calculations such as private facilities, homeowner association facilities, etc. However, the inventory and mapping is not intended to cover 100 percent of all of the facilities and features found in Cary, but only those that are relevant to the purposes of this study.

Table 18: Alternative Provider Inventory included in Level of Service Analysis

Component	Quantity
Ball Diamonds	6
Basketball Courts (full court equiv.)	3
Multi-Purpose Fields	11
Open Turf	5
Picnic Grounds	20
Picnic Shelters	13
Playgrounds	10
Event Space	5
Tennis Courts	6
Water Access	28

Schools

Schools have features like playgrounds, multipurpose fields, gymnasiums, and other components that can provide for some of the public's park and recreational needs and thus reduce the demand on facilities provided by the Town.

The Town of Cary partners with several schools to provide "School Parks." All of these school parks were inventoried. GRASP® methodology, as previously described was used to score each school and its components.

3. Resource Maps

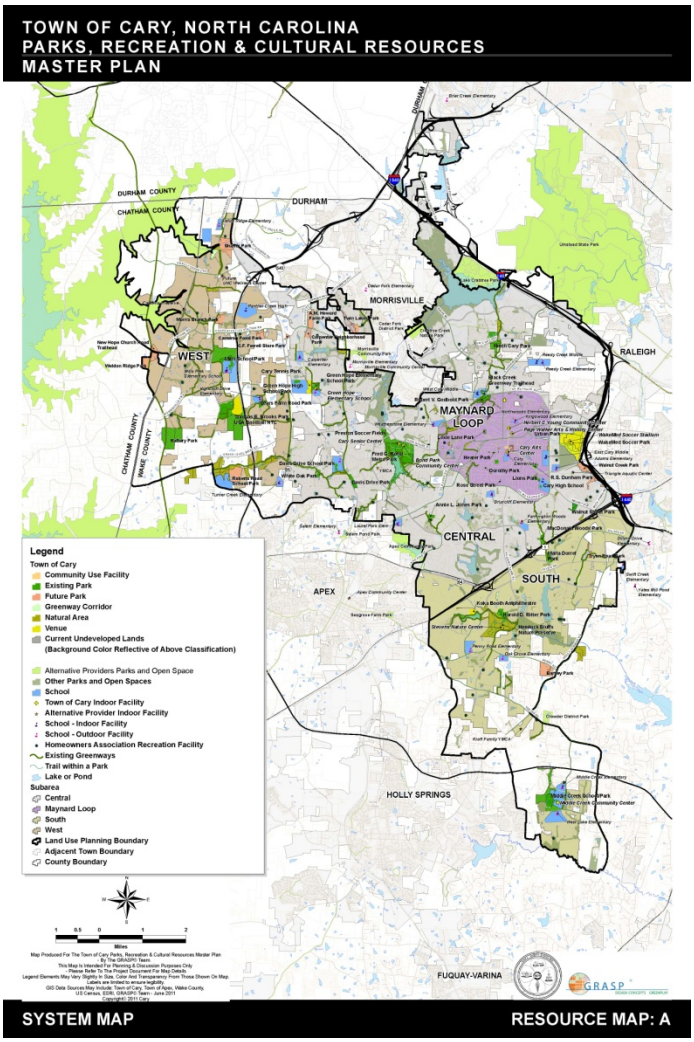
Two different types of maps were created for the inventory and analysis phases of this plan: ***Resource Maps*** and ***Perspectives***. Resource Maps portray raw data and other information that is helpful for understanding existing conditions, such as where things are located. Perspectives are maps on which the results of computations and other analytical processes performed on the data are represented.

NOTE: *Thumbnails of maps have been placed within the text of this document to help the reader know which map is being discussed, but these are not intended to be completely legible at this size. The reader should refer to the larger 11" x 17" maps and GRASP® Perspectives found in* ***Appendix G: Maps and GRASP® Perspectives*** *when reading the maps themselves.*

A single Resource Map was prepared for this report and can be found in ***Appendix G: Maps and GRASP® Perspectives***.

RESOURCE MAP A – SYSTEM MAP

Resource Map A – System Map shows the boundaries of the study area, and the locations and extents of primary trails and parcels that were included in the inventory of data.



Larger maps are located in Appendix G.

C. LEVEL OF SERVICE ANALYSIS

For this planning study, one tool that was utilized is the examination of Levels of Service (LOS). This tool allows for analysis of the quantity, location, distribution, and access to recreation components.

LOS is typically defined in parks and recreation plans as the capacity of the system's components to meet the needs of the public. In this study, LOS will be more specifically defined as follows:

> ***Level of Service (LOS):*** *The computed value that is provided under a stated set of conditions and criteria. LOS may be computed for the system as a whole, or for individual parts of the system. Therefore, LOS is not a single value, but rather it is a series of values that, taken together, form a model of the service that is provided.*

It may be helpful to think of the LOS analysis as being like the dashboard of an automobile. The dashboard is made up of a set of gauges and indicators that inform the driver about decisions that must be made to steer the car on the course the driver intends to take. The dashboard does not tell the driver where to go or how fast to drive. These are decisions that the driver makes by using the information that the dashboard provides.

The LOS information contained here is similar in that it is *descriptive* of the conditions that are present, rather than *prescriptive* of what course should be taken. Deciding the course to take should be done by using the information from the LOS analysis in conjunction with information from other sources, such as surveys, focus groups, staff expertise, etc.

Two methods were used in this analysis. One method used a traditional capacities approach that compared quantity to population. The other analysis used a Composite Values LOS approach. The specific method used here is known by the proprietary name of **GRASP® (Geo-Referenced Amenities Standards Process)**. In this method an evaluation of the functionality and location of each individual component within the entire system is conducted through an inventory process and that information is used to generate a geographic analysis of the service the system provides. This is described below, and a more detailed description of the history of GRASP® and its relationship to traditional planning standards can be found in ***Appendix E: GRASP® History and Methodology***.

1. GRASP® Level of Service Analysis and Mapping

GRASP® methodology is a unique way of looking at LOS because it considers not only the quantity and distribution of parks and facilities but also functionality, comfort and convenience, and overall design and ambiance. It is also unique in that it uses individual recreation *components* to create a component-based model for evaluating LOS.

After scoring each component as outlined in the inventory description, GIS software is used to create graphic representations that allow for easy visual and numerical analysis of the parks, trails, open space and recreation system. Some of the representations show raw data collected through the inventory process or received from other sources. These are referred to as **Resource Maps** as discussed earlier. Representations that emerge from the processing of data within the GIS using analytical formulas and processes are called **GRASP® Perspectives**.

The following Perspectives were prepared for this report and can be found in ***Appendix G: Maps and GRASP® Perspectives***.

Perspective A: Access to All Components
Perspective B: Walkable Access to All Components
Perspective C: Access to Indoor Center
Perspective D: Composition Analysis
Perspective E: Trail Access Analysis

For each **GRASP® Perspective**, a selection of components from the inventory is used. The components included in the selection set are determined by the intent of the Perspective, and may vary from one Perspective to another.

Catchment Areas: In the inventory process, a score was assigned to each component based on its functionality for its intended purpose. This score was adjusted by a formula that factors in the presence or lack of comfort and convenience modifiers, such as drinking fountains, restrooms, etc. The resulting value for each component was assigned to a geographic area defined by a radial distance that surrounds it. This is referred to as the *catchment* area for that component.

In some cases, two catchment areas were assigned for each component – one based on a walkable proximity to the component and another that represents the typical distance from the component within which a majority of users might be expected to come from. In the first catchment area a 1/2- mile radius from the component was used, in order to represent the area within which a person can walk to the component in a reasonable amount of time. The second catchment area used a 1-mile distance as the radius. This was an assumed distance from which the majority of local users for that component are likely to come, by a variety of transportation means such as bicycle, skateboard, vehicle, etc.

The full computed GRASP® value for each component was assigned to each of its two catchment areas. When all of the catchment areas for all of the components within the selection set were plotted on a map, a picture was created that represents the cumulative LOS. Where the catchments for multiple components overlap, darker shades emerge that indicate locations that are "served" by a combination of more components and/or higher quality ones. In other words, **where there are darker shades, the level of service is higher** for that particular Perspective.

Whenever both catchment areas (i.e. 1/2 mile and 1 mile) were assigned to each component, the net result is a doubling of the value of that component to the area within 1/2 mile of it, because of the overlap of the two catchment areas. *This has the effect of assigning a premium to all locations on the map having components within walkable proximity.*

It is important to note that this system differs from traditional Level of Service analyses in that it portrays the cumulative value received from the surrounding park and recreation system **to an individual situated in any specific location on the map**, rather than showing the service being provided by components at a given location to the areas around it.

2. GRASP® Threshold Scores Analysis

For some of the GRASP® Perspectives, the service that results from catchment areas and associated scores are presented in two ways – with infinite tone ranges (orange) and in two tones based on **threshold values** (purple and yellow).

The **infinite tone map** for each Perspective shows the **GRASP®** values with a tone range that portrays nuances of the service that is being provided to the community. This makes it possible to see the differences in service levels being provided by parks and individual components at various locations.

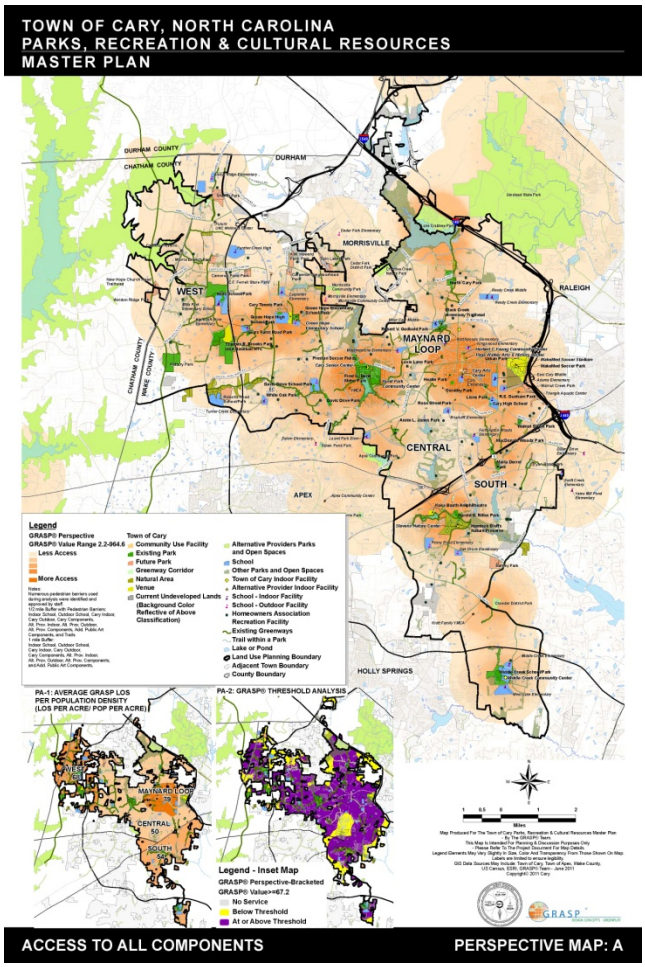
The separate **threshold scores** maps show **GRASP®** score ranges bracketed into categories that represent the following: No Service (gray), Service Below Threshold Score (yellow), or Service At or Above Threshold Score (purple). Threshold scores used for this study were based on an assumed score that would result from a particular "ideal" set of conditions. This is further explained in the description of the individual Perspectives. Because the combination of components used for each Perspective varies based on the set of needs being evaluated, the Threshold LOS value for each Perspective may also vary. The threshold map is derived from the infinite-tones map and is intended to provide additional clarity and interpretation of the infinite-tones map. ***It should not be implied that all parts of the study area should attain the threshold score or that areas below the threshold score are necessarily deficient***. In some areas, no service or a level of service below the threshold score is completely appropriate (such as an area that has no residential development).

Areas with yellow shading on the threshold scores maps have at least some service (**GRASP®** score of greater than zero), but the service score is below the threshold. Areas with purple shading have service scores that meet or exceed the threshold value. Gray areas without shading have a service score of zero.

Some alternative providers have been included in the Level of Service (LOS) computations as described earlier and other providers may be shown simply for reference. Alternative providers included in the LOS analysis include schools (elementary, middle and high schools) and facilities provided by other agencies, such as the county or adjacent municipalities.

3. Level of Service Perspectives

*Thumbnails of the Perspectives, including inset maps and excerpts from some of the maps and Perspectives are shown here for reference and are not intended to be legible at this scale. The reader should refer to the larger maps in **Appendix G** for legibility and clarity.*



Perspective A: Access to All Components

Larger maps are located in Appendix G.

This Perspective shows the service available from all components in the dataset. This includes all outdoor, indoor, active, passive, and other components, including trails and open space. Service is measured based on the catchment areas described earlier, with a premium placed on proximity to components that are available within walking distance, or ½-mile.
Barriers to pedestrian access were taken into consideration for the ½-mile catchment areas. Wherever the ½-mile catchments crossed these, the catchment was truncated at the barrier to reflect the assumption that pedestrian access is hampered by the barrier.

The Perspective shows concentrations of service distributed throughout the Town. These occur mainly around larger parks, such as Lake Crabtree, Fred G. Bond, and Harold D. Ritter. Interestingly, a concentration of service is also observed inside the Maynard loop, where there are no large parks. However, this area has several smaller parks and a number of indoor facilities that boost service.

For the most part, all parts of Cary have at least some service, as indicated by the presence of shading over them.

GRASP®Table A – Access to All Components shows the statistics derived from *Perspective A – Access to All Components*.

GRASP® Table A: Perspective A: Access to All Components

	Percent With LOS	Total GRASP Score	Avg. LOS Per Acre W/ Service	Avg. LOS / Acre Per Pop. Den.	GRASP® Index
West	**99%**	***288***	***142***	***68***	**24**
Maynard Loop	**100%**	***631***	***448***	***79***	**35**
South	**95%**	***572***	***182***	***54***	**23**
Central	**97%**	***1352***	***222***	***50***	**16**
Cary (2011 Census)	**97%**	***2843***	***221***	***56***	**20**

Coverage for Service:

The first column in the table shows the percent of the study area that has at least some service, (i.e., a GRASP® score that is greater than zero). For all of Cary, this number is 97 percent, meaning that 97 percent of the entire study area has a GRASP® score that is greater than zero. Within the Maynard Loop there is 100 percent coverage of service. This makes sense because this subarea is surrounded by the other subareas and receives service from components outside of it as well as those located within it. It is also the most completely developed subarea. The remaining subareas have larger undeveloped areas within them, and therefore may not need 100% coverage of service, as long as service is provided to the developed portions.

It is interesting to note that the West subarea has coverage of 99 percent. This part of Cary is often thought of as somewhat isolated and remote. The high amount of coverage here comes in part from the trails that are located within it, but there is also a wide distribution of schools and natural areas or preserves within the subarea that contribute to service.

Total Component Values:

The second column shows the total GRASP® value for all of the components located within the subarea boundary. This is taken from the computed values of the components using their functional scores and all modifiers (comfort and convenience, design and ambience). This number represents the net value of all the "things" that are specifically located within the boundary of a subarea.

Density of Service:

The third column shows the average GRASP® LOS score per acre *for all acres with service*. This is effectively a reflection of the density of the catchment areas that overlay a given area. This number will vary from place to place depending upon how components are distributed. Communities with relatively few large parks, where all of the components are concentrated in a small area, will have a high value for this indicator. If many catchment areas overlap one another, the density of service will be higher than when those same catchment areas are spread out and do not overlap. For all of Cary, this number is 221 points per acre.

Density of Service Related to Population:

The third column is labeled Avg. LOS / Acre Per Pop. Density. This is a number that is calculated by dividing the Average LOS Per Acre Served (from the previous column) by the average population density (in people per acre for that subarea). Density was calculated by dividing the current population of each subarea by the number of acres within the subarea.

This was done to normalize the LOS that the system provides to the density of the population it serves. The GRASP® Perspective is a density analysis which measures the density of components and the service they provide. ***Comparing density of service to density of population may be one of the most useful indicators in the LOS analysis, because it is a measure of how the value of service offered by the system is distributed in relation to the people it serves.***

In this case, the resulting number for all of Cary is 56 points, and the values for the subareas range from 50 to 79. These are shown graphically on the inset map **PA-1: *Average GRASP® LOS Per Population Density***. While there is no "standard" for this number, when used comparatively it can be a guide in understanding the relative distribution of service across the community. It can also be useful in determining where to provide additional service or adjust service as population shifts occur.

It is interesting to compare this set of numbers with those in the previous column. The previous column shows that the West subarea has the lowest "density" of service (142 points per acre). **But when the density of service is normalized for population density, the West subarea has a *higher* number than all of Cary except for the Maynard Loop.** This shows that while there are less "things" serving the West subarea, there are also less people concentrated there to make use of them.

There is no "correct" value for what these numbers should be. This information is simply provided to be used in conjunction with other findings to make recommendations for future actions.

Threshold Analysis:

Another way to look at LOS from this Perspective is shown on the inset map on Perspective A labeled **Perspective A-2*: Threshold Analysis*.** It shows where the cumulative LOS on Perspective A falls above or below a threshold score.

In this Perspective the threshold score is 67.2 points. That number is equal to the total GRASP® value that would overlay a location with walkable access to a "typical" neighborhood park with four components and a trail after all modifiers and computations are applied to assumed base scores of "2" for all components and attributes.

Purple areas on map A2 are those where scores are at or above the threshold. From the map it can be observed that **most of Cary falls above the threshold score**. This is indicative of the high level of service enjoyed by the residents of Cary wherever they live. While LOS values may vary from one part of Cary to another, overall the LOS is high throughout the Town and this is reflected in the map.

Areas where service is measured to be below the threshold score are shown in yellow on this map. These areas are not necessarily deficient in some way; they simply represent areas where service is measured to be below the threshold value. Much of the yellow area lies at the perimeter of Cary, where service can be expected to be lower until surrounding areas become more fully developed. There is what appears to be a gap in service in the Central subarea to the south of the Maynard Loop. However, this area includes the MacGregor planned residential community that has its own privately provided parks and recreation facilities.

In some cases, areas in yellow overlay non-residential parts of the Town, where lower levels of service are acceptable and appropriate. Note that for all areas, this map does not show how much above or below the threshold they are, and the threshold is not intended to represent a "minimum" acceptable level of service for all areas, but simply a point of reference.

In fact, it is conceivable that some areas shown as purple could be deficient in service, if the underlying conditions (such as higher than normal densities, or unique socio-economic factors) create a situation where a higher threshold is warranted. Such situations should be identified through other tools, such as input from staff and/or the public process, and if they exist, further study by other means can be prescribed.

In the case of Cary, no such geographic gaps or deficiencies were identified, and this map helps explain why. If the areas of yellow and purple were scattered and intermingled, or if they did not match up well with the residential areas, it is likely that the public input process and other tools would have discovered problems with satisfaction levels and a sense of inequity among residents in different parts of the Town. But because service is being delivered at reasonable levels throughout the locations where people live, such problems are being avoided. *This is a strength of the overall system of parks, recreation facilities, open space, and trails* that the mapping corroborates.

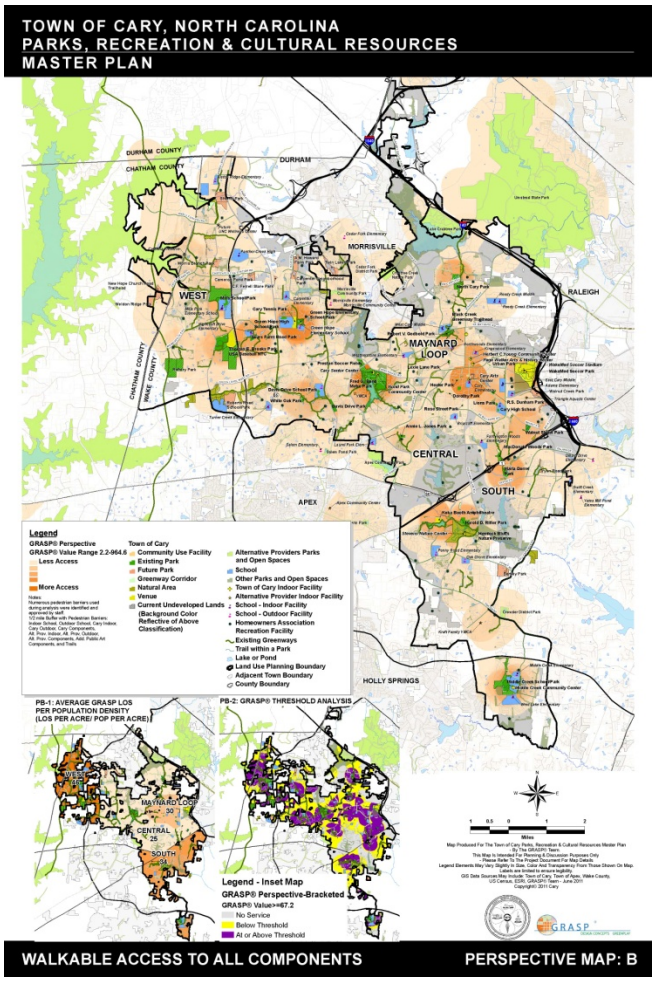
GRASP® Index:

Another way to look at the existing service is to consider the total GRASP® value of all of the components that are physically located within a defined area, regardless of where they are located within or how their service areas overlap one another. **When this total GRASP® number is divided by the population of the defined area in thousands, the result is called a GRASP® Index.** (The GRASP® Index for Access to All Components is shown in the last column of GRASP® Table A.) In Cary, this number is a score of 20 points. For the subareas, it ranges from a low of 16 in Central to a high of 35 in Maynard Loop. An explanation of how the GRASP® Index can be used to plan and manage the system of parks, trails, and open space is presented in Section 5 of this Appendix.

Perspective A Summary:

This analysis is not intended to determine what the minimum scores should be for any of the parameters. Rather, it is intended to provide a way of measuring current Levels of Service so that they can be compared to the findings from other instruments, such as citizen surveys, input from focus groups, etc. If those tools indicate that there are places where satisfaction levels are low, or where service inequities or gaps are reported, the Perspectives can be used to measure the actual difference in LOS between those areas and other ones where service is considered adequate or appropriate. Actions can then be taken to achieve equity. Targets for the resulting LOS can be established and progress towards meeting those targets can be measured.

However, this does not necessarily imply that the ***mix*** of features being offered is the one that residents currently desire. It may be that changes and/or improvements are needed within some areas to fit the specific mix of services to the needs and expectations of residents. Again, this is determined through the public process, and did not appear to be an issue in Cary.



Perspective B: Walkable Access to All Components

Larger maps are located in Appendix G.

Perspective B shows the relative access to all components from a walkability point of view. It uses the same set of components as Perspective A (i.e., all components in the inventory), but only the ½-mile catchment areas were plotted. The 1-mile catchment areas were not used. The purpose of this Perspective is to portray the service provided by the system within a walkable proximity across the study area.
Pedestrian barriers were also factored into this analysis. The barriers used were the same as the ones in the previous Perspective and were applied in the same manner.

As in the previous Perspective, darker shades are scattered throughout the Town and primarily clustered around larger parks and facilities. However, the sizes of these areas of concentration are smaller and more scattered due to the smaller catchment areas used to generate the Perspective.

Table B shows the statistics derived from this Perspective. They are the same ones presented for Perspective A and can be compared to those to see how LOS changes when looked at from a walkable proximity only.

GRASP® Table B
Perspective B: Walkable Access to All Components

	Percent With LOS	Total GRASP Score	Avg. LOS Per Acre W/ Service	Avg. LOS / Acre Per Pop. Den.	GRASP® Index
West	**96%**	***288***	***95***	***46***	**24**
Maynard Loop	**94%**	***631***	***172***	***30***	**35**
South	**66%**	***572***	***114***	***34***	**23**
Central	**71%**	***1352***	***113***	***25***	**16**
Cary (2011 Census)	**76%**	***2843***	***116***	***30***	**20**

The numbers show a decrease in percentage of coverage as well as a decrease in the LOS scores. This is because without the 1-mile catchment areas, there is less overlap of service from components, and components that are more than ½-mile away from a given location do not contribute to the LOS for that location. Note that, as in Perspective A, the relative ranking of service changes when population density is factored in. The average LOS Per Acre Served is lowest in the West subarea, but it is highest when density is factored in.

The GRASP® Index is the same in both tables because of the way it is calculated. For the GRASP® Index, the only consideration is whether or not a component lies within the physical boundary of a given area. The relative location of components within the given area, as well as the relative positions of components to one another within the area do not have an effect on the GRASP® Index like they do on the Perspectives. Also, in the Perspectives, components from outside the boundary of a given area can influence the LOS within it, but in the GRASP® Index they do not.

As in Perspective A, areas above and below a threshold score are shown on the **Perspective PB-2 - GRASP® Threshold Analysis**. It shows where the cumulative LOS on Perspective B falls above or below the threshold score of 67.2, which is the same threshold used in Perspective A-1. This threshold was used to allow for direct comparison of service between the two Perspectives.

Areas where service is below the threshold score are shown in yellow on the threshold map PB-1. In and of itself, the fact that an area falls below the threshold score does not mean that it has a deficit in service. The threshold applies primarily to "typical" single-family residential areas. Rural areas, industrial zones, or other areas without significant residential development may have thresholds for service that are much lower than the one used in this analysis. Areas with exceptionally high density (typically found in large urban areas and not present in Cary) may warrant thresholds that are higher than the one used here.

Areas in gray on the map fall outside the catchment area of any components. The LOS in these areas is zero. This may be acceptable if the area is undeveloped, preservation lands, or other non-residential use. Residential areas that are colored gray on this map may be lacking in service.

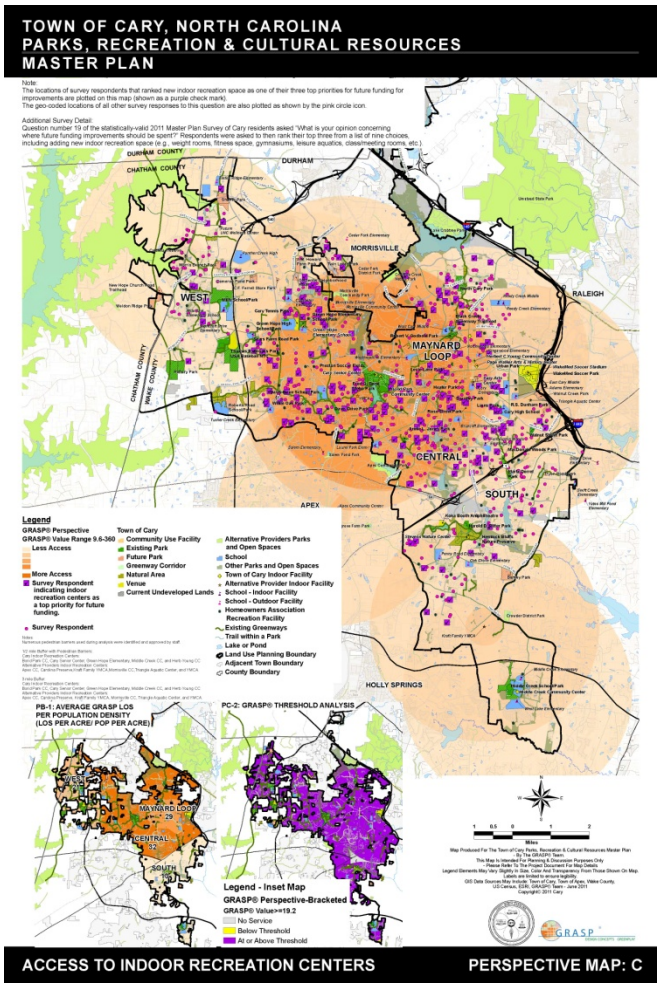
Purple areas on the map PB-2 are those where scores are at or above the threshold. The purple area makes up about half of the total area that has service (i.e. the total area that is either yellow or purple). This can be used as a baseline to set targets and measure progress in increasing the walkability of the Town. For example, a goal might be established to increase the percentage of purple from 50% to 75% over some period of time.

The map shows many areas where the yellow overlays residential areas. If improving walkability is a goal in Cary, these should be examined in more detail for potential ways to increase the LOS score.

Also, note that this map does not show how much above or below the threshold any given location might be. Relatively small improvements in the facilities that are serving areas in yellow may be enough to raise them into the purple category. Areas that are yellow and not gray on the map are presently served by one or more components. It can be assumed that these components lie within property owned or managed by one or more of the providers included in the inventory and analysis. What this means is that land upon which service upgrades can occur is currently available within a walkable proximity to these under-served locations. Simple improvements such as adding walking paths, interpretive features, benches, or other amenities may be all that is needed to raise the LOS to the threshold score in these areas.

As in Perspective A, it is conceivable that areas shown as purple could be deficient in service, if underlying conditions create a threshold that is higher than 67.2 points. This analysis is not intended to determine what the actual score for any given location should be. The threshold score is simply an assumed guideline that applies primarily to typical residential areas. Also, because the score can be attained from any combination of components, this analysis does not determine whether or not the *mix* of components within walkable proximity of any given location is the one that people desire.

In summary, this analysis is intended to provide a way of measuring current Levels of Service so that they can be compared to the findings from other instruments, such as citizen surveys, input from focus groups, etc. If those tools indicate that there are places where satisfaction levels are low, or where service inequities or gaps are reported, the Perspectives can be used to measure the actual difference in LOS between those areas and other locations. Actions can then be taken to achieve equity. Targets for the resulting LOS can be established and progress towards meeting those targets can be measured.



Perspective C: Access to Indoor Recreation Centers

Larger maps are located in Appendix G.

Perspective C shows the relative access to all indoor recreation components. Two catchment areas were used. The first is a ½-mile radius that is the walkable distance to the facility. Pedestrian barriers were taken into account in for the ½-mile catchments. The second catchment is a 3-mile radius that reflects a reasonable driving distance. Pedestrian barriers were not considered for the 3 mile catchments.

As in the previous Perspectives, darker shades show higher levels of service. In this case, the higher LOS is concentrated in the central part of town, with lighter shades surrounding it and covering most of the community.

Table B shows the statistics derived from this Perspective. The numbers show good coverage for service throughout the town. All areas have more than 90% coverage for service. For total GRASP® value, the Central subarea has the highest score, meaning it has the most components within it.

West Cary has the lowest, reflecting the presence of less components for indoor use located there. When LOS scores are examined, it is seen that Average LOS per Acre Served is highest in the Maynard Loop subarea and lowest in the West. When population density is factored in, Central has the highest LOS, and South has the lowest. When GRASP® Indices are considered, Central has the highest value and West and Maynard loop tie for lowest. These numbers indicate that the Central is generally well served, and unless specific components are lacking, there is probably no need for action in that subarea.
South subarea is an interesting case, because it has numbers for total GRASP® score and GRASP® Index that, while not the highest, are in the mid-range. It also has good coverage for service at 95%. But its average LOS, both with and without population density factored in, is low. This suggests that in this subarea, adequate numbers of components are available, but the distribution of these is such that they are spread out and their catchment areas do not overlap. Also, catchments from components in other subareas are not reaching into this subarea. **In effect, South subarea suffers from a bit of isolation compared to subareas in terms of access to indoor recreation components.**

GRASP® Table C
Perspective C: Access to Indoor Recreation Centers

	Percent With LOS	Total GRASP Score	Avg. LOS Per Acre Served	Avg. LOS Per Acre Per Pop. Den.	GRASP® Index
West	**98%**	***19.2***	***43***	***21***	**1.6**
Maynard Loop	**100%**	***28.8***	***166***	***29***	**1.6**
South	**95%**	***50.4***	***44***	***13***	**2.0**
Central	**93%**	***189.6***	***140***	***32***	**2.3**
Cary (2011 Census)	**95%**	***288***	***106***	***27***	**2.1**

A threshold score of **19.2** was used for **Perspective C-2 - GRASP® Threshold Analysis**. This score is the equivalent of two components, such as a gymnasium and multipurpose room. However, this score could be achieved from other combinations, such as a fitness room and teen or senior lounge. Virtually all of Cary meets or exceeds the threshold score. **This indicates that there is a good distribution of indoor facilities across the Town, but it does not guarantee that those facilities have the combination of components that are needed or desired at each location**.

The locations of survey respondents that ranked new indoor recreation space as one of their three top priorities for future funding for improvements are plotted on this map (shown as a purple check mark). The geo-coded locations of all other survey responses to this question are also plotted as shown by the pink circle icon. Overall distribution of responses indicating a high priority for indoor recreation is fairly uniform. This indicates that the desire for indoor recreation is not higher or lower in any particular part of Cary. It should be noted that no responses came from the far south part of town, where LOS was found to be lower than the other subareas in Perspective C.

Also, note that this map does not show how much above the threshold any given location might be. Because the score can be attained from any combination of components, this analysis does not determine whether or not the *mix* of components within walkable proximity of any given location is the one that people desire. True needs in localized areas could be higher or lower than the threshold. The threshold score is simply an assumed guideline that applies primarily to typical residential areas.

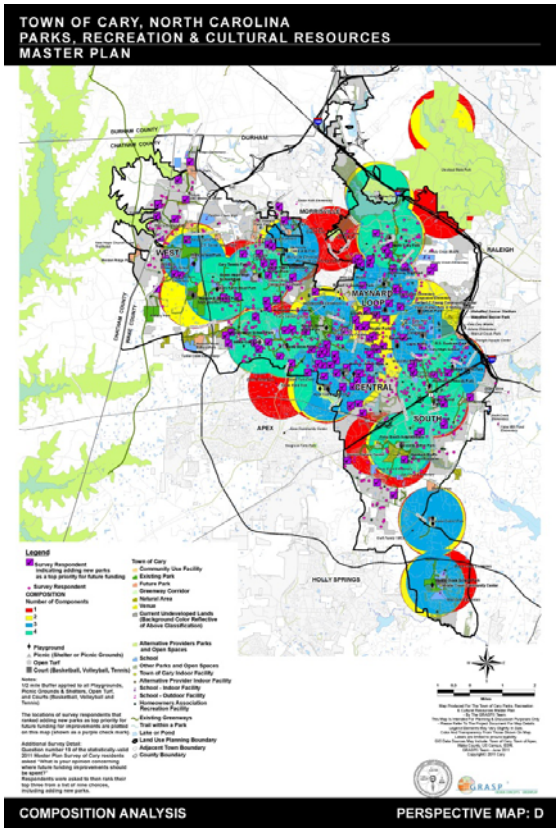
In summary, this analysis is intended to provide a way of measuring current Levels of Service so that they can be compared to the findings from other sources, such as surveys, input from focus groups, etc. If those tools indicate that there are places where satisfaction levels are low, or where service inequities or gaps are reported, the Perspectives can be used to measure the actual difference in LOS between those areas and other locations. Actions can then be taken to achieve equity. Targets for the resulting LOS can be established and progress towards meeting those targets can be measured.

Summary Table

GRASP Table D below shows the values from the Perspectives in a format that allows for different parameters to be compared to each other. Colors are used to show the high and low values for each parameter. The orange color represents the low value, and the green represents the high value.

GRASP Table D: Summary GRASP Table

Service Coverage Summary - Percent With Service			
	P-A: All	P-B: Walkability	P-C: Indoor
West	99%	96%	98%
Maynard Loop	100%	94%	100%
South	95%	66%	95%
Central	97%	71%	93%
Cary(2011 Census)	97%	76%	95%
LOS. Summary - Avg. LOS Per Acre Served			
	P-A: All	P-B: Walkability	P-C: Indoor
West	142	95	43
Maynard Loop	448	172	166
South	182	114	44
Central	222	113	140
Cary(2011 Census)	221	116	106
LOS. Summary - Avg. LOS Per Acre / Population Per Acre			
	P-A: All	P-B: Walkability	P-C: Indoor
West	68	46	21
Maynard Loop	79	30	29
South	54	34	13
Central	50	25	32
Cary(2011 Census)	56	30	27
LOS. Summary - GRASP® Indices			
	P-A: All	P-B: Walkability	P-C: Indoor
West	24	24	1.6
Maynard Loop	35	35	1.6
South	23	23	2.0
Central	16	16	2.3
Cary(2011 Census)	20	20	2.1



4. Additional Level of Service Analysis

Two additional Level of Service analytical maps were completed for this Master Plan:

Perspective D: Composition Analysis
Perspective E: Trails Access Analysis

These maps are described below.

Perspective D: Composition Analysis

Larger maps are located in Appendix G.

Perspective D provides a different way of looking at service. Previous perspectives looked at the cumulative value of service provided by components. This one analyses the "mix" or composition of components available within a 1-mile radius of any given point in Cary. Trails are shown for reference only, and are not included in the analytical information.

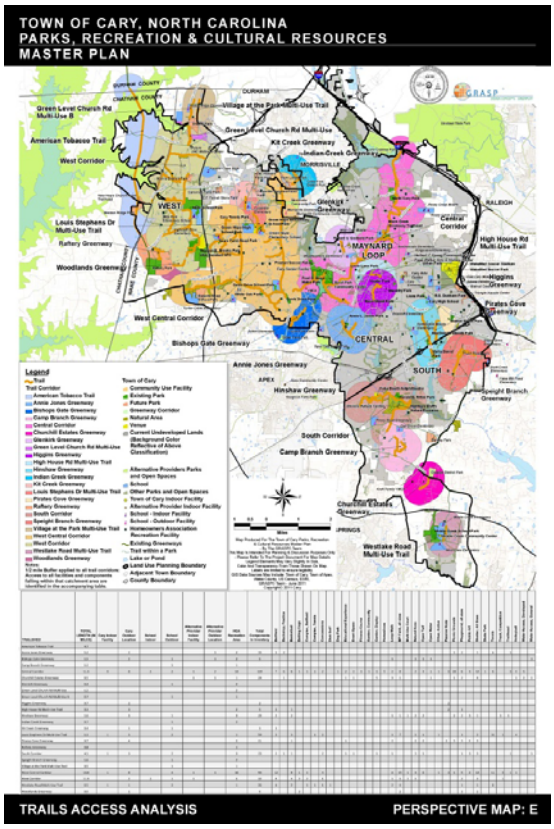
Geo-coded locations of Master Plan survey respondents who ranked adding new neighborhood parks as a top financial priority are also shown to allow a comparison between the availability of services and where the responses related to the importance of those services came from.

Components from the inventory were grouped into four categories:

- Playgrounds
- Open Turf
- Picnic Shelters
- Courts

Colors on the map indicate how many categories are represented by at least one component within a mile of any given location.

Stated differently, the color on the map that overlays a particular location tells how many of the categories are available within one mile of that location. It is a useful tool for measuring the *diversity* of components typical of neighborhood parks throughout Cary. However, it does not reveal *which* of the four components are represented, only *how many* of them are. It also does not convey how many components (i.e., how many courts and whether they consist of different kinds of courts or one kind) are available, or the capacity of those.



The parts of town with access to a full range of amenities are shown in the green color. These occur mainly in the west, north, and central-southeast parts of town.

Areas with only one category of amenity are shown in red. These tend to occur at the fringes of the community, where lower levels of service are normal. Overall, the main gap in service shown by this analysis happens in the central part of town, where there is a gap with no access to any components, and some area of red and yellow (meaning only one category is available).

The locations of survey respondents that ranked adding new parks as top priority for future funding for improvements are plotted on this map (shown as a purple check mark). A concentration of these responses is seen in the central parts of town.

Perspective E: Trails Access Analysis

Larger maps are located in Appendix G.

Perspective C provides a way of looking at the service provided by trails. In this Perspective, the trails within the dataset are identified as individual networks. Each individual network is a set of continuously connected trails. This means that within an individual network, **all segments of trail are connected and any segment can be reached from another without leaving the network**. Twenty-four (24) discreet trail networks were identified in Cary. These were labeled as shown on the Perspective.

In Perspective C, a ½-mile catchment area distance has been applied to all segments of each network. The resulting area within this catchment is the *trailshed* for that network. The GIS data was queried to determine the number and types of facilities and components that fall within each trailshed. This provides an assessment of what facilities and components are accessible within a ½-mile distance of the trail, and therefore can be reached by way of the trails within the network without having to leave the trail, other than at the beginning and end of the journey.

GRASP®Table E– Trail Access Analysis shows some of the data associated with each trailshed and allows for comparison of the connectivity and service provided by each trail network. An expanded version of this table with more information on the specific components that fall within each trailshed is found in ***Appendix G***.

Whenever two trailsheds are connected together, a new trailshed emerges that is equal to the sum of the two, meaning that it has access to all of the components found in both trailsheds. This can be used for planning purposes to identify places where linking existing trails together will yield the greatest benefit in terms of connectivity.

GRASP Table E: Trailshed Statistics

TRAILSHED	TOTAL LENGTH (IN MILES)	Cary Indoor Facility	Cary Outdoor Location	School Indoor	School Outdoor	Alternative Provider Indoor Facility	Alternative Provider Outdoor Location	HOA Recreation Area	Total Components In Inventory
American Tobacco Trail	4.7								
Annie Jones Greenway	1.2		2				1	2	15
Bishops Gate Greenway	1.5		2		1		1	2	5
Camp Branch Greenway	1.2				1			1	
Central Corridor	11.3	3	8	2	2	1	2	14	119
Churchill Estates Greenway	0.5					1	1	1	24
Glenkirk Greenway	0.4				1			2	
Green Level Church Rd Multi-Use	1.2							2	
Green Level Church Rd Multi-Use B	0.7				1			1	
Higgins Greenway	0.7		2						2
High House Rd Multi-Use Trail	0.3		3					2	5
Hinshaw Greenway	1.6		3		1			3	23
Indian Creek Greenway	0.7				1			2	
Kit Creek Greenway	0.4		1		1				1
Louis Stephens Dr Multi-Use Trail	1.1	1	3		2			1	59
Pirates Cove Greenway	0.7		4					2	21
Raftery Greenway	0.8							1	
South Corridor	4.5	1	3		2			3	23
Speight Branch Greenway	1.6				1			2	
Village at the Park Multi-Use Trail	0.5				1			1	
West Central Corridor	14.4	1	8		4	1	1	16	94
West Corridor	11.9		2	2	1	1		5	32
Westlake Road Multi-Use Trail	0.5	1	1		2			1	26
Woodlands Greenway	0.5		1						6

5. Other Tools for Measuring Level of Service (LOS)

Besides the GRASP® Perspectives and associated LOS numbers, this assessment also uses capacities based analysis tools. One tool determines capacity by comparing GRASP® scoring to population, and the other tool models traditional methods of determining LOS by using straight quantity as compared to population.

Table 19 shows numerical indices for LOS that account for both quantity and functionality of components. The table shows the community GRASP® Index for each component, as well as the number of GRASP® points needed to maintain the current indices as the population grows.

GRASP® Index

The first part of the GRASP® Index Table shows the total GRASP® score for that component when all of the components in the dataset are included. During the inventory process, two sets of scores were assigned to each component, a Neighborhood score and a Community-wide score. The Community-wide scores are used to create this table.

Table 19: Overall GRASP® Indices

Projected Community Components GRASP® Index 2020

Current Population	139,382	Projected Population 2020*	175,598

	Total GRASP® Community Score per component type	GRASP® score per 1000 population (GRASP® Index)	Total GRASP® score needed at projected population	Additional GRASP® score needed
Ballfield	304.2	2.18	383.2	79.0
Basketball	159.7	1.15	201.2	41.5
Community Garden	11.7	0.08	15	3.0
Ed. Exp	25.8	0.19	32.5	6.7
Horseshoes	50.7	0.36	63.9	13.2
Loop Walk	55.2	0.40	69.5	14.3
MP Field, all sizes	167.3	1.20	210.8	43.5
Open Turf	96.75	0.69	121.9	25.1
Picnic Grounds	159.3	1.14	200.7	41.4
Playground, all sizes	141.45	1.01	178.2	36.8
Shelter, all sizes	246.35	1.77	310.4	64.0
Skate Park	11.7	0.08	14.7	3.0
Tennis	838.35	6.01	1056.2	217.8
Volleyball	99	0.71	124.7	25.7
Water Access, all	29.25	0.21	37	7.6

***Based on "Census Revised Pop Estimates GP - Planning1" (Sept. 30, 2011)**

The second column in the table shows the index that results when the GRASP® score is divided by the current population in thousands. This is the overall GRASP® Index for that component. The third column in the table shows the total GRASP® score that must exist to achieve the same GRASP® Index at the projected population 2020, and the fourth column shows the additional number of GRASP® points needed to achieve that score.

This information can be used to plan for future improvements to the parks and recreation infrastructure to accommodate growth. Because GRASP® scores are a blend of quantity and quality; it is possible to increase them by either adding components or improving the quality and functionality of existing ones. In most cases, a combination of the two will be recommended. Used in conjunction with the Capacities LOS Table that follows, the best combination of quantity and quality can be determined for planning purposes.

The GRASP® Indices also allow the community to benchmark its combined LOS for quality and quantity of service over time and measure its progress. For example, if a community's population stays the same over time, and components are neither added nor removed, the LOS will remain constant *as long as the quality of the components is maintained*. If the quality and functionality of components is allowed to decrease, resulting in lower GRASP® scores for those components, a decrease in LOS will show up in the GRASP® Index. Conversely, if the population remains the same and no components are added or deleted, but some components are upgraded in quality, and increase in LOS will show up in the GRASP® Index.

This is particularly useful as communities shift their emphasis from growth (i.e. adding components) to sustainability (maintaining what you have). The GRASP® Index is a good tool for tracking LOS as the components in the system begin to age and need replacing. This idea will be discussed in more detail in the recommendations section.

Capacities Level of Service

For some components, the quantity needed is proportional to the population that will be served by that component. This is a fairly easy calculation when components are programmed for use. The programming determines how many people will be using the facilities over a period of time. Sports fields and courts fall into this category. For other components, the ratio of components to the population may vary, depending upon the size or capacity of the component and the participation levels within the community for the activity served by the component. Skate parks and group picnic facilities fall into this category.

Table 20 reflects the projected needs for community components for specific parks through 2020. An analysis was completed for the need for specific athletic facilities, which was based on current and estimate programming demands and use of Cary's facilities by its citizens These estimates and their recommended locations are intended to allow the Town to achieve an equitable distribution of recreational opportunities across the community and to provide a basis for estimation of potential future facility development costs.

These recommendations represent guidelines for park planning and development and do not serve as a minimum level of development. These may differ from national standards which sometimes are limiting to communities since each community has specific use patterns of its parks, multi-purpose fields, ball fields, and court facilities. It is important to note that capacities tables are simply one tool that can be used to make final recommendations and establish budgets. **The table assumes that the current ratios and demands are satisfying today's needs and that the same ratios will satisfy needs in the future. In reality, needs and desires change over time due to changes in demographics, recreational trends, and other factors.** The numbers of facilities shown on this table may differ from the final recommendations due to availability of land, ability to upgrade existing facilities, and other factors.

Lastly, each potential park site will need to be considered individually for its site characteristics, opportunities and constraints, and recreational facilities in nearby park units considered as facilities are chosen.

Table 20: Capacities Chart

Proposed Level of Service for Inventory Components	Ballfields - All Sizes	MP Field - All Sizes	Tennis	Multi-purpose Courts	Basketball	Volleyball	Loop Walk	Open Turf	Picnic Area	Picnic Shelter (Rentable)	Playgrounds	Public Art	Trailhead	Restrooms	Disc Golf	Dog Park	Splash Pad
Projected Population - 2020 - 175,598																	
Number that should be added by 2020 based on current ratios and projected needs	16	14	36	8	15	11	13	11	9	18	16	12	12	16	2	3	2
Future Neighborhood Park																	
Cameron Pond Park	2		6	2	1		1	1	1	1	1	1	1	1		1	
Carpenter Park					2		1	1	1	1	1	1	1	1			
Lexie Lane Park																	
Morris Branch Park					1		1	1	1	1	1	1	1	1			
New Hope Church Road Trailhead Park										1		1	1	1			
Tryon Road Park				2	1		1			1	1	1	1	1			
Twin Lakes Park				6	1		1	1	1	1	1	1		1			
Walnut Creek Park							1				1	1		1	1	1	
Weldon Ridge Park	2	1			1	8	1	1	1	1	1	1	1	1			
Future Community Parks																	1
Bartley Park		2			2		1	1	1	1	1	1	1	1		1	
Cary Tennis Park (Existing 33 courts)			8							1							
Kitt Creek Park (Shaffer)									1	1	1	1	1	1			
Mills Park, Ph II	1		8			2	1	1	1	1	1	1	1	1			1
Raftery Park	3				2			1	1	1	1	1	1	1	1		
Proposed School/ Park																	
Alston Ridge School/ Park	2	2												1			
Briarcliff Elementary	1	1					1			1	1						
Cary Elementary (not on Master Plan Map)	1						E			1	E	E					
East Cary Middle	1	2						1		1	1						
Farmington Woods Elementary (Homeowners Recreation Site only)		1		2			1	1		1	1		1	1			
Oak Grove Elementary	1																
Panther Creek High School			6											1			
Penny Road Elementary	1	1				1				1	1	E		E			
Reedy Creek Elementary/Middle	1	1					1			1	1						
Roberts Road School/ Park		1	8		2		1	1		1	1		1	1			
Weatherstone Elementary		1					1										
Total Proposed	**16**	**13**	**36**	**12**	**13**	**11**	**13**	**10**	**9**	**18**	**16**	**12**	**12**	**16**	**2**	**3**	**2**
Difference between proposed and number that should be added by 2020	0	1	0	-4	2	0	0	1	0	0	0	0	0	0	0	0	0

E= Existing

Comparisons to Other Communities

The following table is a summary of results from some other communities. The values in the table are intended to provide a context and comparison for the analysis, not to imply a set of standards. Results of the analyses will vary from community to community due to a number of reasons, including underlying geography, local expectations, and variations on the set of assumptions on which the analyses are based**.**

For example, data for some of the communities may include alternative providers while others do not. Some may include undeveloped parks and other sites while others do not.

Table 21: Comparative Data

STATE	AGENCY	POPULATION	STUDY AREA SIZE (Acres)	# OF SITES (Parks, Facilties, etc.)	TOTAL # OF COMPONENTS	AVG. # COMPONENTS per SITE	TOTAL GRASP® VALUE (Entire System)	GRASP® INDEX	AVG. SCORE/SITE	% of TOTAL AREA w/LOS >0	AVG. LOS PER ACRE SERVED	AVERAGE LOS/POP DEN PER ACRE
MA	M-NCPPC	828,770	318,926	526	2369	4.5	11800	14	22.4	93	168.8	65.0
OK	TULSA	384,037	356,383	186	1588	8.5	5536	14	29.8	87	111.3	103.3
FL	FT LAUDERDALE	181,095	23,230	91	483	5.3	2662	15	29.3	98	221.4	28.4
CO	LAKEWOOD	144,369	27,494	105	738	7.0	6476	45	61.7	100	NA	
IA	CEDAR RAPIDS	143,788	45,987	98	759	7.7	2467	17	25.2	86	299.6	95.8
CO	FORT COLLINS	130,681	33,388	45	619	13.8	2675	20	59.4	83	217.0	55.4
FL	WINTER HAVEN	100,000	42,191	31	230	7.4	328	3	10.6	37	174.9	73.8
NC	ASHEVILLE	75,948	27,027	58	378	6.5	1043	14	18.0	77	322.9	114.9
IN	BLOOMINGTON	72,032	15,001	45	258	5.7	2125	30	47.2	99	197.4	41.1
CA	PALM SPRINGS	**50,663**	60,442	16	123	7.7	1030	20	64.4	**1**	*85.5*	102.1
NC	CARY	139,382	*35,578*	43	562	13.1	2843	20	66.1	97	221.0	56.4

The *GRASP® Index* may be the most useful comparison to look at in this table. The table shows that Cary has a GRASP® Index that, while not the highest, is higher than many communities. This suggests that the combined overall quantity and quality that its system offers to residents on a per-capita basis compares favorably to other communities.

The Average Score/Site number is determined by dividing the Total GRASP® Value of the entire system by the number of sites. Cary has the highest number of all the communities in the table. This indicates that in general Cary's parks are larger in size and/or have more components in them than typically found in other communities. It is true that in general, Cary seems to have fewer parks spread a bit farther apart than other communities, but these parks are of high quality and contain a full complement of amenities. This shows up in the analyses as high LOS coverage and values for the overall composite (Perspective A), but lower coverage and average LOS values for walkability (Perspective B).

6. Level of Service Key Findings

The findings from the GRASP® analysis show what the current levels of service are for a variety of parks and recreation needs. While the GRASP® methodology allows quantitative measurements to be made for Levels of Service, there are no established standards for what the resultant numbers should be. This is because every community is different. In this sense, the GRASP® analyses are *descriptive* and not *prescriptive*. **The numerical analyses presented here provide a measurement for what the level of service is for a given location, but not what it should be.** Threshold scores have been used to get a sense of where the service value falls above or below an assumed value, but that value is not intended to represent a target or minimum standard.

Other tools are used to determine what the value should be in specific cases. These include surveys, focus groups, demographic composition, and others. However, the **GRASP® values can be used in conjunction with other findings**, such as community surveys and public input, **to determine whether current LOS is meeting needs and expectations, then used as a benchmark for creating targets and measuring results in the future**.

An interesting finding from the analyses is that the computed LOS in various parts of the Town may not line up with the perceptions that people have, especially when LOS is normalized for population density. Some areas that may be perceived to have lower LOS actually score higher than areas where service is perceived to be adequate. It does not mean that the perceptions are necessarily wrong, just that they may be due to the composition and location of facilities, rather than the pure quantity or quality of what is available.

Another finding is that because Cary has a high LOS for conventional access to services (i.e. ,driving), the focus can now shift towards improving walkability instead of having to address gaps in service or poor quality of service. (From a big picture perspective, at least – there may be localized exceptions.)

Also, trail connectivity is important to people, and connectivity improvements can also improve walkability. The Trailshed Analysis can be used to determine how linking existing trails to one another can yield the greatest results, and where key areas that lack access to trails are located.

The most obvious finding from the analysis is that Cary is well-served for parks and recreation in the traditional sense. This is commendable, given the challenge of serving a community that varies from quite rural to moderately urban in some areas. This does not mean that there are no people or places in Cary that lack service in some specific way. The GRASP® analyses are intended to measure what the current levels of service are and the relative differences in LOS from one location to another, but do not in themselves prescribe what the LOS should be. Used in conjunction with other tools, recommendations for target LOS can be developed.

While the analyses indicate that Cary enjoys an overall excellent LOS, the challenge will be to sustain that as the system ages and matures. In the past, parks and recreation master planning was often focused on meeting the challenges of growth. Growth and new development bring land and dollars into the system and offer opportunities to provide facilities that are new, exciting, and in line with the latest needs and desires. When land and money from growth are no longer driving the system, other resources must be found to not only maintain the system as it ages, but also to update facilities and provide new ones that address evolving changes in demographics, lifestyles, and other trends. The Levels of Service identified in this analysis are benchmarks against which Cary can measure its success in sustaining the quality of its system of parks, trails, and open space over time.

While the analyses used to determine LOS are very effective at putting numerical values on the physical assets that are offered, it does not measure how effectively the assets offered fit the desires of the public they are intended to serve. This must be determined by other means, such as citizen surveys and other public input. However, once certain types of assets are determined to be desired, the analyses can be used to determine how adding those assets to the system (and possibly replacing other assets with them) will affect the LOS that the system provides. The current value then becomes a baseline from which targets for improved values can be set and progress over time can be measured.