

LITTLE MULBERRY PARK



Gwinnett County, Department of Community Services, Parks Division

Miller Tract Expansion and Karina Miller Nature Preserve

Prepared by: CERULEA Inc.

February, 2002

Little Mulberry Park Master Plan – Miller Tract Expansion

The Little Mulberry Park Master Plan was prepared with the participation and guidance of the Master Plan Steering Committee members. For their efforts we are most appreciative.

<i>Wayne Hill, Chairman, Bd. of Commissioners</i>	<i>Charlotte Nash, County Administrator</i>
<i>Ms. Teresa Cantrell, Gwinnett Open Land Trust</i>	<i>Mark R. Williams, Recreation Authority</i>
<i>Ms. Sheila Southerland, Park Neighbor</i>	<i>Rick Lux, Gwinnett Historical Society</i>
<i>Joe and Nell Parks, Park Neighbor</i>	<i>Ann Cofield, Equestrian Representative</i>
<i>Lynn Lacock, Church Neighbor</i>	<i>Lisa Klein, Georgia Natural Heritage Program</i>

The support and vision of the Gwinnett County Board of Commissioners has assured preparation and faithful implementation of the Master Plan:

<i>Chairman:</i>	<i>Wayne Hill</i>
<i>District 1:</i>	<i>Marcia L Neaton-Griggs</i>
<i>District 2:</i>	<i>Patti Muise</i>
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1.0 Project Goals and Objectives

This study addresses the recent 404-acre expansion of the original 485-acre tract to include the Miller Tract, bringing the total park area to 890 acres. A prior report dated January 2001 summarizes the master plan process for the initial 485-acre assemblage. The goals guiding this phase of the project include:

- Preserve the natural resources associated with the park, including the Karina Miller nature reserve area to be set aside within the 404 acres.
- Preserve potential archeological resources from disturbance.
- Provide for potential interpretation of the extensive natural and cultural resources.
- Provide access suitable for a broad range of passive and active trail and open space activities to include multi-use trails, equestrian/walking trails, limited fishing and other lake-related activities, and picnicking.
- Encourage sufficient levels of use to ensure regular public presence to reinforce public safety objectives.
- Set aside a 40-acre area for potential active recreation (use and timeframe undetermined).

2.0 Site Context

The 404-acre Miller Tract was acquired in one parcel in 2001. The addition of this tract to the 485-acres already in the park is highly complementary. Access to the expanded site is via Hog Mountain and Mineral Springs Roads as well as historical trails linking to the original parkland tract. The park is adjacent on two sides to private land, including some larger tracts that recently have been rezoned for subdivision development (see **Context Diagram**).

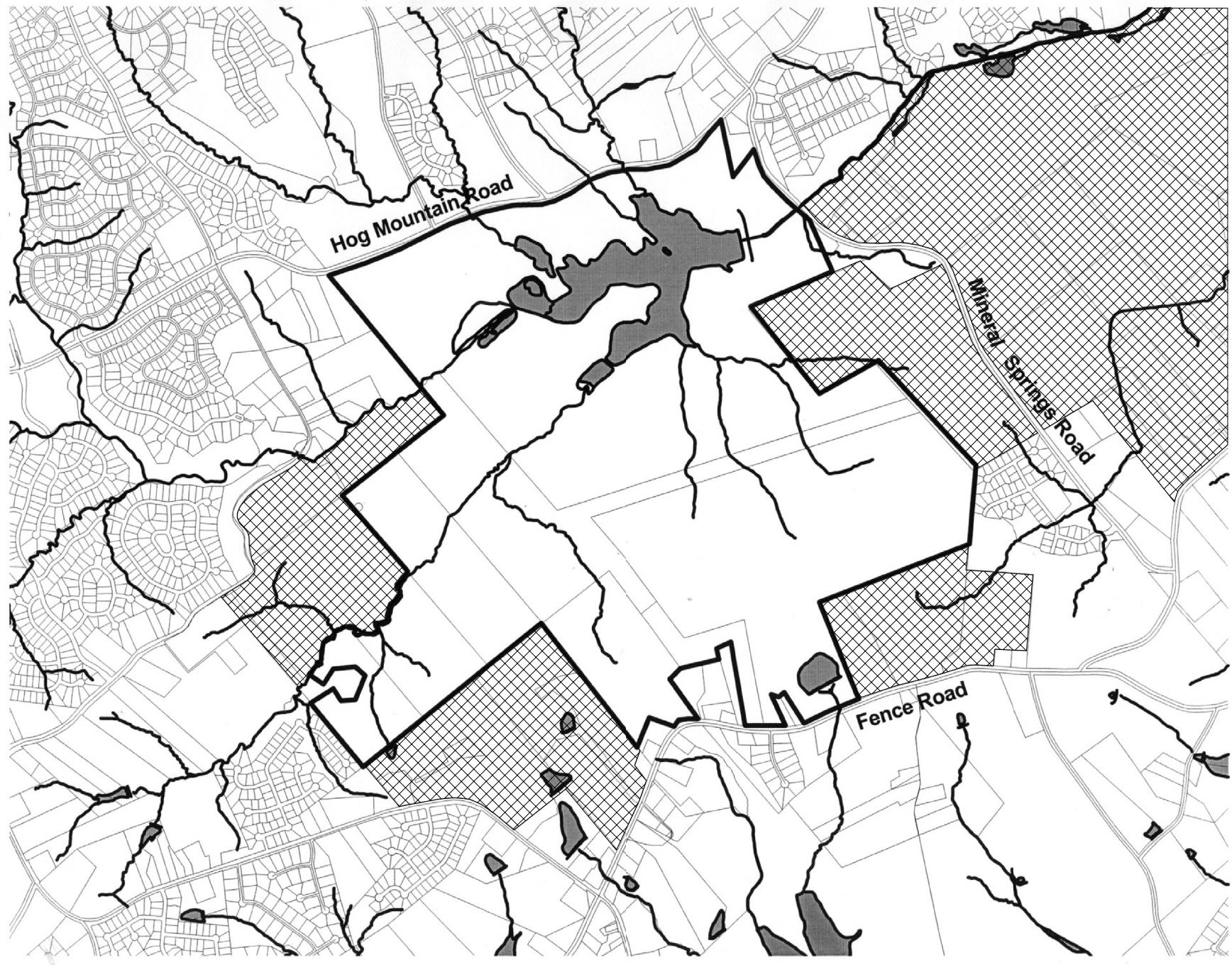
3.0 Methodology

Using a traditional approach to the park planning process, the project progressed through a series of interim tasks to arrive at a consensus Master Plan. The sequence of tasks performed to develop the Master Plan included:

- Program Confirmation based on input of staff as well as the Steering Committee.
- Field reconnaissance to identify natural and optimal trail alignments, with new alignments in critical areas flagged in the field (but not surveyed).
- Inventory and Analysis of the site including topography, vegetation, hydrology, and soils.
- Steering Committee visit to FDR State Park and Calloway Gardens to review equestrian trails, rustic park architecture, lakeshore access and fisheries management concepts.
- Alternative Development Concepts prepared to test a variety of design concepts.
- A Preliminary Master Plan.
- A final Master Plan developed with a phased Cost Estimate.
- Presentation of the final products to the Recreation Authority.

Context Diagram

Hatched Areas Represent Adjacent Large Tracts Complementary to the Park



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The following provides additional brief description of the methodology and timeline:

Base Plan Development and Preliminary Trail Staking (through October 1, 2001)

Using digital DXF files derived from the County GIS system, CERULEA prepared a composite AutoCAD base plan for the site. The County furnished digital property surveys from the project surveyors, Hayes James and Associates that documented a consolidated boundary survey and ground survey of the SCS Lake High-Water Contour.

County staff and CERULEA performed field reconnaissance to flag existing and potential trail alignment from the lake to the Phase I acreage to adjust the Phase I trail layout to allow crossings of the Phase II equestrian trail system. Staff reviewed the trail plan together with a narrative prepared by CERULEA of equestrian trail issue interviews and data about trail stabilization methods.

Site Visit (October 18, 2001)

Together with the full steering committee, the site was walked over in detail to include the complete trail around the lake, as well as the alignment of the bulk of the equestrian trail system.

Comparable Site Visit (November 10, 2001)

Together with the steering committee and key staff, a full-day field trip was conducted to FDR State Park and Calloway Gardens. At FDR State Park, the group observed CCC era rustic park architectural elements such as group shelters, picnic table shelters, bathhouse, garage, administration building, bridges, gates, and cabins. Also at FDR, the group walked a mile of equestrian trail, interviewed a group of 25 trail riders, and toured the equestrian trailhead stables with associated trailer parking area.

At Calloway Gardens, the Committee reviewed several new concepts such as: a divided parkway crossing an open meadow and woodland; “woven” parking in a woodland setting with a density of 40 spaces per acre, turf stabilized gravel overflow parking, the sustainable architectural concepts in the Virginia Hand Calloway Discovery Center; lakeshore plantings, decks, and boardwalks, outdoor classrooms, and fisheries management principles.

A draft program was reviewed at this time, with particular discussion of the subject of fisheries management and shelter sizes.

Inventory and Analysis (through November 28, 2001)

A series of five graphics were then prepared to record the findings organized under the headings of: Topography & Circulation; Watershed; Vegetation; Views and Spatial Relationships and Soils.

An instructive analysis was the topographic analysis of the existing and probable trail alignment. The slopes and relative grade changes of the various segments of the equestrian trail were reviewed to reach consensus in the following conceptual design phase. Also of a critical nature

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was the study of spatial relationships as adjacent parcels may threaten the park in terms of incompatible viewsheds.

Conceptual Development (November 11-28, 2001)

Three alternative concept plans were quickly developed to consider the program requirements. The plans were varied and were presented to the Steering Committee on November 28, 2001. All the alternatives satisfied the project goals and objectives, but differed principally on the basis of the north lakeshore development, particularly in terms of large group shelter locations. The group was uncomfortable with the provision of a 40-acre area in the northwest reserved for active recreation.

From this process, Scheme B was selected for refinement. Among refinements would be an addition of a nature interpretive boardwalk across the silted western extreme of the lake and provision of a pier near the outdoor classroom at the central lakeshore activity area. The number of fishing piers was to be increased from 4 to 6 with various configuration changes of the piers to include small shaded areas on each pier and alignment as a boardwalk crossing the cove in the southern-most tip of the lake. Also, a cross-linking trail was requested to connect the equestrian trail with the Upper Woodland Trail loop from the Phase I Master Plan.

Preliminary Master Plan Development (November 29-December 12, 2001)

The Preliminary Master Plan was presented to the Steering Committee on December 12, 2001. The plan was recommended without plan changes as a final master plan for the next meeting. CERULEA also subsequently confirmed the timeline for sanitary sewer availability and the location of an adjacent subdivision driveway.

Final Master Plan (December 13, 2001 – February 21, 2002)

The final plan and cost estimate were presented on January 9, 2002 to the Steering Committee. There were no plan refinements requested by the Steering Committee. The discussion of the cost estimate was the focus of the meeting. The final color master plan was prepared and presented to the Recreation Authority on February 21, 2002, and many of the Steering Committee members were in attendance.

4.0 Site Inventory and Analysis

The following constitutes a summary of the inventory and analysis process. Each major category of discussion is supplemented by a diagrammatic graphic.

Topography and Circulation

The site is comprised of two distinct landform categories. The main element, visible from the Hog Mountain and Mineral springs Roads frontage is a 222-acre area of pastures and rolling woodlands surrounding the 46-acre man-made SCS lake. The balance of the property is Pool Mountain's north flank to include a range of wooded side-slopes, some very steep (25-40%), and some forested coves. There is a 270-foot elevation change from the highest to lowest points on the property.

Excluding the lake surface, less than 78 acres of the property is sloping less than 10 percent. Almost all of this more gently sloping land is north of the lake along Hog Mountain Road (see Diagram).

Existing circulation through the property includes a very well developed perimeter loop trail all around the lake and over the dam, roughly 2.2 miles long. In addition, there are several miles of existing dirt trails, some very well worn, that access the far reaches of the tract and link up in some cases with trails on neighboring tracts.

The extent of on site trail development is fortuitous as it allows numerous options for the development of a pedestrian and equestrian trail system. There are portions of the existing lake perimeter loop that exceed ADA slope guidelines. These problems may be accepted in the final master plan design or may be addressed through regrading or alignment changes. The determination of this issue depends on more detailed survey data than available from the GIS database.

The slopes of trails on the Pool Mountain flanks are not sustainable and are not safe for equestrian use. These steeper segments should be abandoned and replaced with more gradual sideslope trails and switchbacks as appropriate.

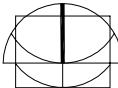
One very old trail alignment connects the lake loop with trails proposed for the high meadows in the 485-acre park tract to the south. This linking trail, probably over 100 years old could be repaved in a naturally compatible way using stabilizing additives to the native subsoil.

There are a variety of options for park entrance locations from Mineral Springs and Hog Mountain Roads. At Hog Mountain Road, the Pine Road alignment was realigned as this study progressed. As a result, the existing driveway access to the Miller Residence is out of alignment with the new Pine Road intersection. A new subdivision entrance is under development between Patrick Road and the parks north-west corner on Hog Mountain Road and the final master plan must respond to this new geometry in terms of access to that part of the site.

Topographic & Circulation Diagram

Little Mulberry Park Master Plan - Phase II

0 400 800 1600



Possible Park Entrance

Good roadway sight distance, can provide access to north lake area.

Moderate Slopes (< 10%)
77.9 Acres (not including lake/swamp)

Existing Path / Driveway
Shaded Portions Exceed 5% @ Lake,
and Exceed 16% Elsewhere

*Possible Drive Entry
Good roadway sight distance,
can provide access to area
below dam.*

Extreme Slope
Existing trail slopes in the 16-22% range are eroding, hazardous, and difficult to maintain. Reconstruction with steps or realignment required for pedestrian/equestrian use.

See prior Master Plan for this Area

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Watershed

As the project acreage does not occupy the full extent of the upstream watershed boundaries, there remain certain considerations related to siltation and water quality of the lake. Most of the acreage drains into the lake or directly into the Little Mulberry River below the dam. The acreage of the watershed subunits was charted to assist in the visualization of these parameters (**see Diagram**).

This study was conducted during one of the most severe droughts in recent history. Consequently, many local groundwater springs and streams were not in evidence or otherwise dried up. One such example is a table-rock “waterfall” outcrop along the old trail south of the lake, which supported a trickling stream and very modest waterfall over a sheer rock ledge. This may prove a more interesting element in future years.

The most telling hydrological issue is the extent of the 100 year high-water elevation above the lake normal pool. Per GIS data, the lake normal pool is 878.7 while the 100-year pool level is 899.6, nearly 20.9 feet higher. This flood zone covers over 140.5 acres of the site severely limiting where development may occur.

Where the perimeter lake trail crosses 5 existing major tributary streams (including the Little Mulberry River) there is inadequate provision for the peak flows. There are no culverts at several other high flow locations. The trail is damaged at these points and new culverts are required. These crossings may be pipes, box culverts or bridge sections, respective of the Phase I project budget. These existing crossings are well below the 100-year flood storage elevation of the lake, so they currently do restrict the 100-year flow. As presently configured, several of the existing restrictions have caused upstream siltation deposition and modest loss of flood storage capacity within the lake watershed.

Vegetation

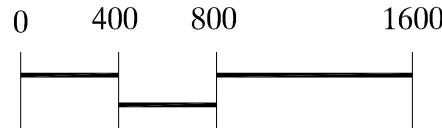
The vegetation units on the site support the program of public access and parking north and east of the lake and trails on the steep woodland terrain south and west of the lake. Vegetation units were mapped and analyzed (**see Diagram**).

Pasture

While the initial impression upon arrival at the park is the extensive pasture along Hog Mountain Road, less than 55 acres of the 404-acre site is presently maintained as such. The pasture areas require regular mowing or bush hogging to maintain that character. This pasture is to be maintained as such with certain areas mowed on a monthly basis and the perimeters mowed annually. The regime used here will be similar to that developed for the more extensive pastures on the adjacent park acreage.

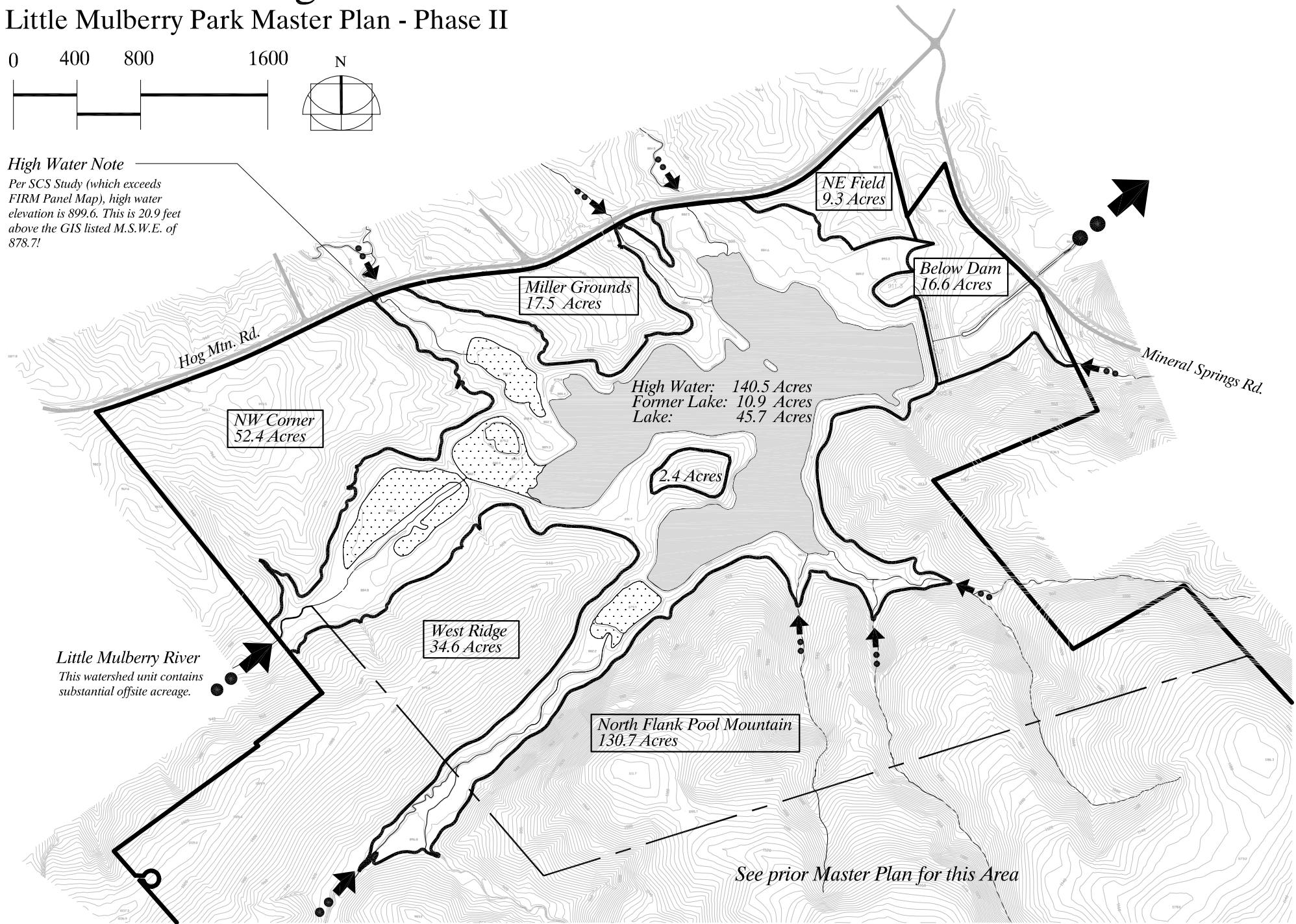
Watershed Diagram

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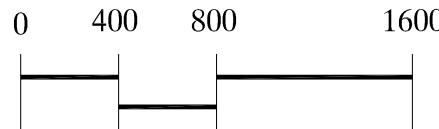
High Water Note

Per SCS Study (which exceeds FIRM Panel Map), high water elevation is 899.6. This is 20.9 feet above the GIS listed M.S.W.E. of 878.7!



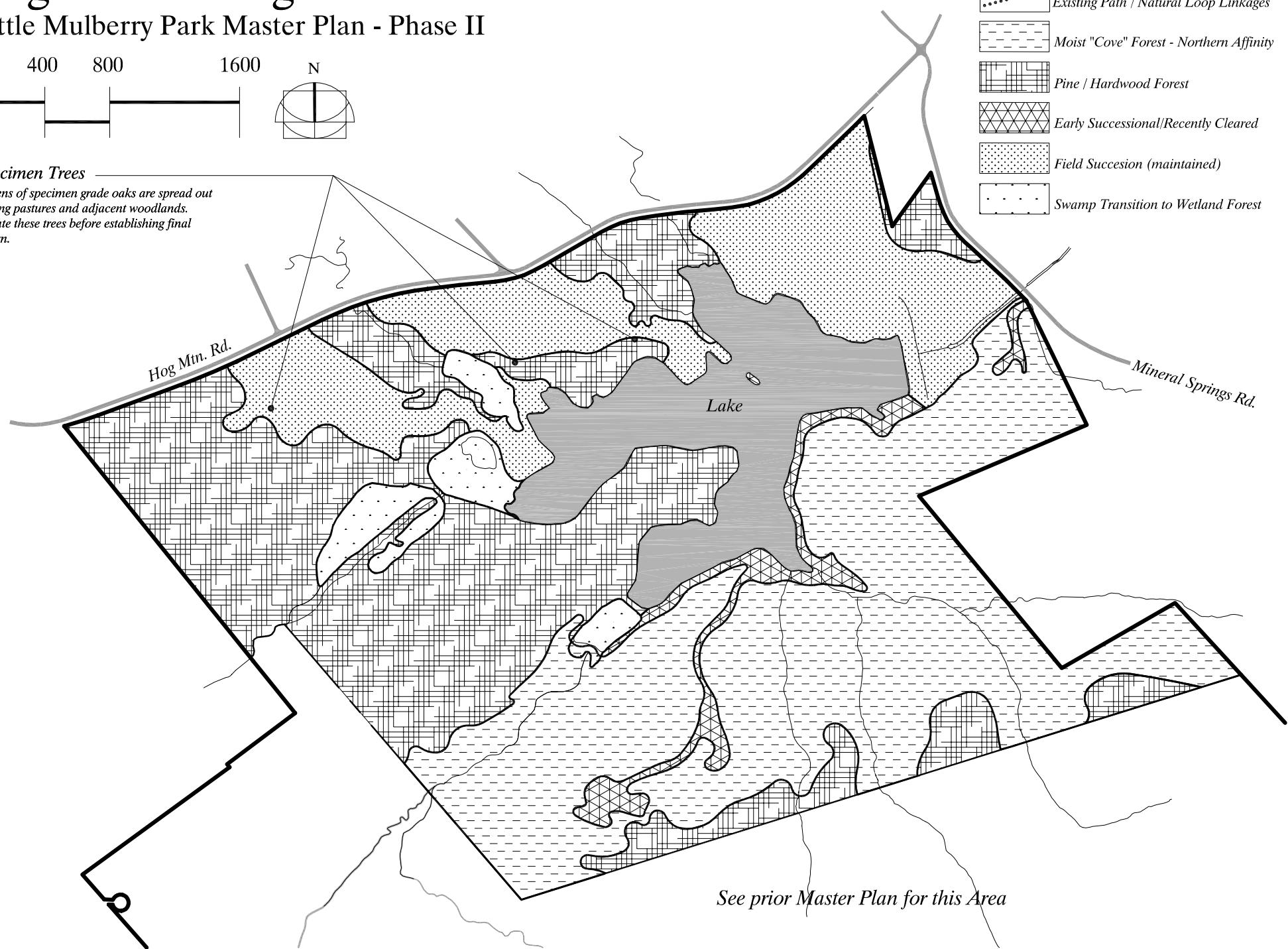
Vegetation Diagram

Little Mulberry Park Master Plan - Phase II



Specimen Trees

Dozens of specimen grade oaks are spread out among pastures and adjacent woodlands. Locate these trees before establishing final design.



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Woodlands

There are two distinct units of woodland cover. To the west of the lake, a mixed forest of pine and hardwood is now undergoing the classical transition from pine to hardwood. South of the lake, on the steep slopes of Pool Mountain, an older hardwood stand with very few pines offers a more attractive woodland setting. Within this later area, there are moist cove forest of more northern affinities with larger beech and oak specimen trees. Additional study, including cataloguing and mapping these species distribution is suggested. The existing path and natural loop linkages avoids directly impacting these areas.

Swamp Transition Areas

Roughly 10 acres of former lake bed have been silted in, mostly in the last decade. These areas are giving rise to a young hardwood forest of hydric affinity with river birch, red maple, black willow, and black alder stands rapidly developing. Beaver have moved to these new habitats.

Wildlife

The site is home to a diverse range of fauna. Comprehensive inventories have not been prepared, however, the caretaker at the Miller property prepared a list of observations (**see Appendix C**).

Soils

There is a wide range of soil cover on the 404-acre park site that has been mapped (**see Diagram**). A table has been prepared (**see Table**) to summarize the physical attributes of the respective soils series. Given the limited ground disturbance proposed, comments in the following are limited to those areas where soil profile may play a part in design.

In the vicinity of the parking lots there are proposed restroom facilities that will require septic field support. The soil series in this area (AmC2, WrE2, PgE2, LnE) exhibit sandy loam to clay loam properties and depending on natural slope and depth to recharge line would be expected to exhibit permeability in the range of 0.4 to 2.5 inches per hour. These values should be found suitable for utilization of traditional septic field systems.

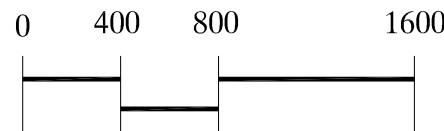
The Appling (AmC2), Altavista (AkA), and Louisburg (LnE) soils are rated AASHTO-2 or better for engineering properties and may be good borrow sites for trail surfacing replacement in lieu of high clay native soils.

Elsewhere on the site, where soil disturbance is limited to that associated with trail development, the concern in the area of soils is towards probability of excessive shrinkage or swelling. In all such areas, the values are in the moderate to low potential range.

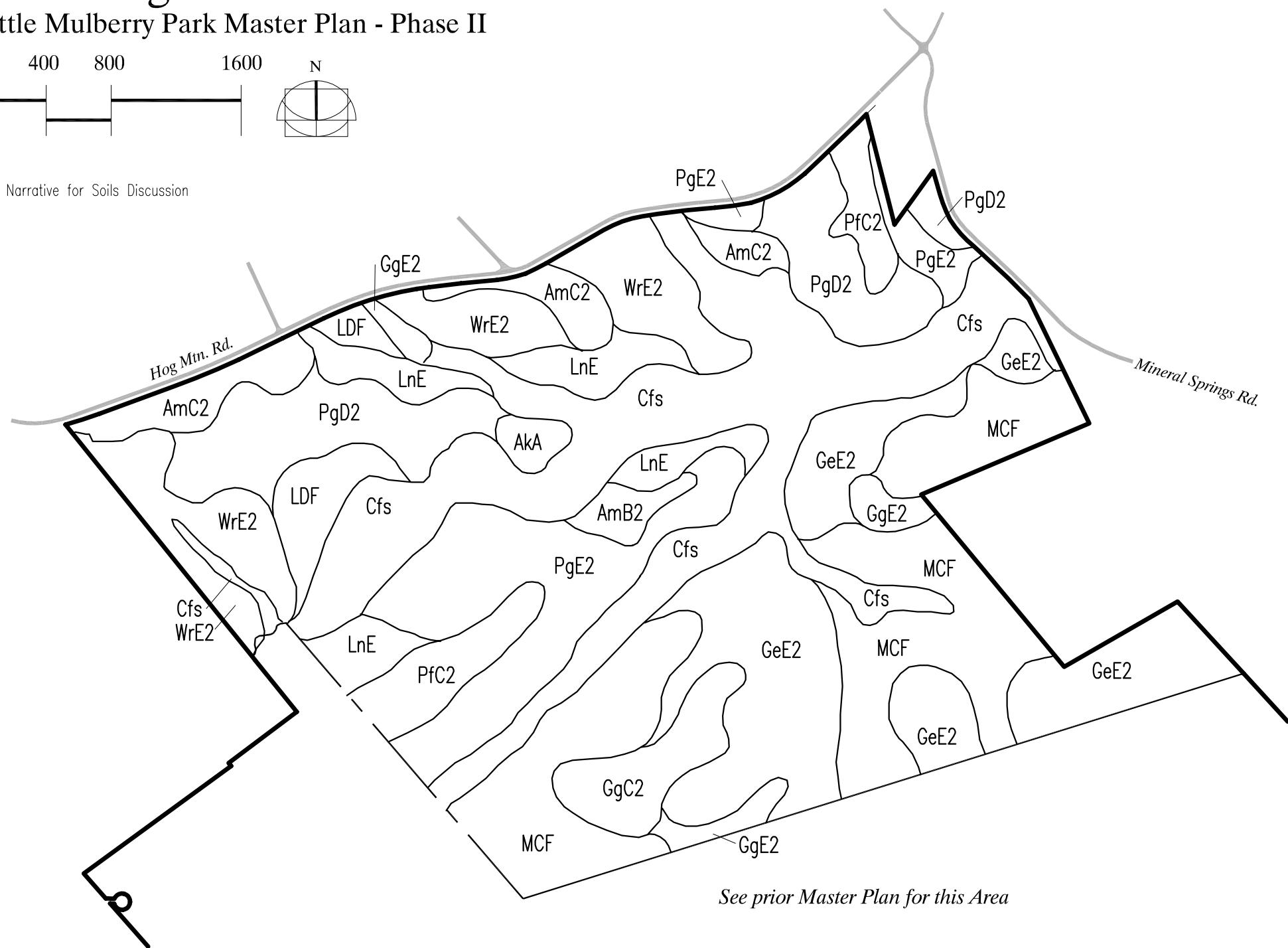
There are other areas of the site where the woodland trail development may encounter shallow depth to bedrock. The Musella soil series (MCF) and Gwinnett Loam (GgE2) that is associated with most of the steep, north-facing slopes of the un-named tributary valley may have a cobbly

Soils Diagram

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See Narrative for Soils Discussion



Soils Table

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Estimated Physical Properties of Site Soils

from Soil Survey for Gwinnett County, Georgia, July, 1967 USDA SCS

Soil name	Depth to hard rock	Depth to seasonally high water table	Depth from surface	Classification			Percentage passing sieve--			Permeability	Available water capacity	Reaction	Shrink-swell potential
	Feet	Inches	Inches	USDA texture	Unified	AASHO	No. 4	No. 10	No. 200				
Altavista (AkA) -----	>5	20-26	0-6	Fine sandy loam--	SM-----	A-2-----	95-100	95-100	10-30	2.0-6.3	0.12	5.6-6.0	Low.
			6-37	Sandy clay loam--	CL, ML---	A-6-----	95-100	95-100	50-60	0.2-0.6	.15	4.5-5.5	Moderate.
			37-52	Sandy clay-----	CL-----	A-6, A-7-	95-100	95-100	55-75	0.2-0.6	.10	4.5-5.0	Low to moderate.
Appling (AmB2, AmC2, AnC2) ---	>8	>50	0-10	Sandy loam-----	SM-----	A-2-----	95-100	95-100	20-35	2.0-6.3	.12	4.5-5.0	Low.
			10-24	Sandy clay loam--	ML-CL---	A-6-----	90-100	95-100	50-60	0.8-2.5	.14	4.5-5.0	Moderate.
			24-42	Sandy clay-----	MH-CH, CL.	A-7-----	95-100	95-100	60-75	0.2-0.8	.13	4.5-5.0	Moderate.
Chewacla (Cfs) -----	>10	0-24	0-6	Silt loam-----	ML, SM---	A-4-----	100	95-100	45-55	0.6-2.0	.17	4.5-5.0	Low.
			6-28	Silty clay loam--	ML, CL---	A-1, A-6-	100	95-100	50-65	0.6-2.0	.14	4.5-5.0	Moderate.
			28-42	Silt loam-----	ML-----	A-1-----	100	95-100	50-70	0.6-2.5	.14	4.5-5.0	Low.
Gwinnett (GeB2, GeC2, GeE2, GeB2, GgC2, GgE2) -----	>6	>60	0-7	Loam-----	SM-----	A-2, A-4	95-100	85-100	20-40	2.5-5.0	.13	5.1-5.5	Low.
			7-35	Clay-----	MH, CH---	A-7-----	95-100	95-100	83-90	0.8-2.5	.13	5.1-5.5	Moderate.
			35-43	Clay loam-----	CL-----	A-6, A-4	95-100	95-100	55-75	0.8-2.5	.13	5.1-5.5	Moderate to low.
Louisburg (LDD, LDF, LnC, LnE) -----	1½-4	>60	0-6	Loamy sand----	GM, SM--	A-2-----	50-100	35-95	10-30	5.0-10.0	.08	5.1-5.5	Low.
			6-13	Sandy loam----	SC, SM--	A-4-----	95-100	95-100	40-50	2.0-6.3	.075	5.1-5.5	Low.
			13-29	Weathered rock.									
Musella (MCD, MCF) -----	>8	>60	0-6	Cobbly loam----	SM-----	A-2, A-4-	80-85	60-70	30-40	0.8-2.5	.15	5.1-5.5	Low.
			6-15	Clay-----	CH, MH, CL	A-7, A-6-	70-85	70-85	60-70	0.8-2.5	.13	5.1-5.5	Moderate.
			15-60	Broken rock.									rate.
Pacolet (PfB2, PfC2, PgB2, PgC2, PgD2, PgE2, PfF) -----	>6	>60	0-8	Sandy loam-----	SM-----	A-4-----	90-100	80-95	35-50	2.5-5.0	.13	5.1-5.5	Low.
			8-26	Clay-----	MH, CH---	A-7, A-6-	95-100	90-100	55-75	0.8-2.5	.13	5.1-5.5	Moderate.
			26-34	Sandy clay loam-----	CL, ML---	A-6, A-4-	95-100	90-100	50-70	0.8-2.5	.13	5.1-5.5	Moderate. low.
Wedowee (WrE2) -----	>5	>60	34-48	Sandy loam-----	SM-----	A-4-----	95-100	90-100	40-50	2.0-6.0	.10	5.1-5.5	Low.
			0-11	Sandy loam-----	SM-----	A-2-----	95-100	95-100	20-35	2.0-6.0	.12	4.5-5.0	Low.
			11-16	Sandy clay loam-----	CL-----	A-6-----	98-100	98-100	50-65	0.6-2.5	.11	4.5-5.0	Moderate.
			16-25	Sandy clay-----	MH, CL, SC,	A-7-----	95-100	95-100	40-60	0.6-2.5	.11	4.0-4.5	Moderate.
			25-35	Clay loam-----	CL, SC---	A-6, A-7-	95-100	95-100	40-65	0.6-2.5	.10	4.5-5.0	Moderate.
			35-50	Loam-----	ML-----	A-4, A-6-	95-100	95-100	50-60	2.0-6.0	.12	4.5-5.5	Low to moderate.

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topsoil and bedrock at depths of 15 to 60 inches. This should not greatly impact the woodland trail as construction of the trails does not call for deep cuts. Any stone encountered during construction here is needed for water bars, steps or other trail-related elements.

Cultural Resources

Cultural resources (man-made objects and other evidence of historical habitation) will play an important, though perhaps obscure aspect in the park. The existing cultural resources include the existing buildings and animal paddocks at the Miller Home site, the SCS dam and perimeter trails the perimeter hog-wire fence system, various dirt paths in meadow and woodland areas, remnant terracing of the meadows, and numerous of stone mounds.

Per prior archeological investigations, the stacked stone mounds have been variously attributed to pre-Columbian habitation by Native Americans and to post-settlement agriculture (these areas were previously logged and open pastures or farmlands). It is beyond the scope of this master plan study to resolve the attribution question.

This study did not map the stone mound locations, however, when various trail alternatives were tested in the field, there was never a case where the trail development would disturb a mound. In general, the trail does not often come in close proximity to the major concentration of stone mounds. In the instances where the trail comes in close proximity to stone mounds, it is intended that appropriate interpretive signage will be placed to present the various theories about the mounds. During construction, protective fencing would be necessary to protect adjacent stone mounds.

Views and Spatial Relationships

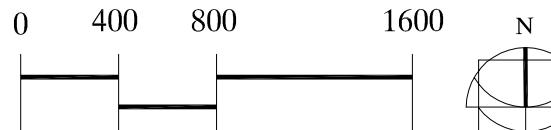
Perhaps the most compelling reason to visit the site is to enjoy the beautiful lake and its surrounding park viewshed. A graphical depiction of the prime viewing relationships (see **Diagram**) illustrates that the strongest view opportunities are from the perimeter lake trail.

Views from the ridgeline and side slopes of Pool Mountain offer limited views to the lake and surrounding pastures. This is due to thick hardwood vegetation. In the wintertime, there are fair views available down the wooded slopes and coves. The master plan does not advocate clearing of the hardwood flanks of Pool Mountain for the sake of opening views to the lake below.

The Diagram locates potential visual liabilities from adjacent properties which if developed would detract from the trail experience. Furthermore, the potential future development of active recreation in the northwest corner of the site could impose a dramatic limitation of the impact of the lake viewshed from a variety of viewpoints, particularly if tall light poles are set in place.

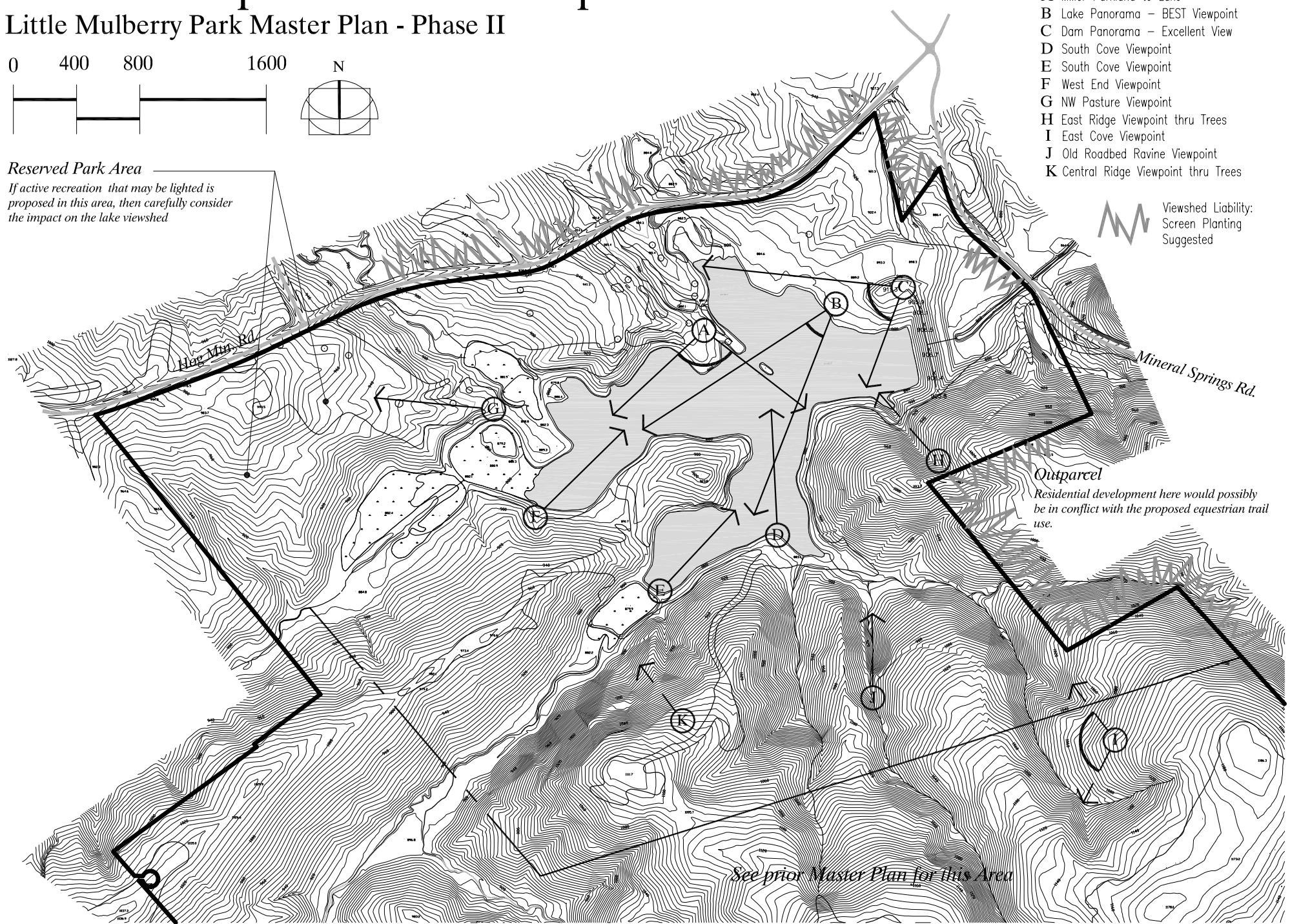
Views and Spatial Relationships

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Reserved Park Area

If active recreation that may be lighted is proposed in this area, then carefully consider the impact on the lake viewed.



5.0 Development Program

Working with the Steering Committee and DCS staff, a finalized program for park development was prepared. There was much discussion of this program with the Steering Committee in order to carefully consider the theming of the program elements. **Photos and Illustrations used herein to illustrate the character of various elements are not explicit guidance as to design, but indications of the intent and vision of the staff and steering committee through this process.**

Passive Intent and Identification of Thematic Zones

On the ground, there are two distinct passages of scenery:

- A. The Lake with associated edge gently rolling pastoral terrain to the north and east and a dramatic ridgeline to the south and west; and
- B. Pool Mountain's north flank to include a range of wooded side-slopes, some very steep, and some forested coves.

Together with the previously master planned 485 acres to the south, the resulting parkland offers a diverse range of landscapes to experience. Edge definition will be an important consideration to maintain the integrity of the landscape composition. The edge is typically indefinite, owing to large-scale on-site landscape buffers. Buffers must be maintained or supplemented so that the park visitor cannot see neighboring intrusions. Care must be exercised in the execution of buffer plantings to maintain the indefiniteness of edge necessary to realize the full potential of the site. Buffer plantings in straight rows are not appropriate.

The Lake

The 46-acre man-made lake is the defining element within the 222-acre lake surrounds. The visitor can gracefully enjoy this passage of scenery, almost completely free of off-site intrusions, by walking a well-graded 2.2 trail all around the lake. Along the way, the experience is reinforced by complementary adjacent landscape elements such as: three separate pastures (55 acres) rolling down to the lake margins; five in-flowing streams with associated forested wetlands and beaver ponds; a striking 10-acre peninsula which neatly cleaves a 12-acre cove into a picturesque association with the rugged landscape of the 300 foot tall Pool Mountain Ridge; and an earthen dam offering a striking panoramic prospect.

There remains concern that a potential 40-acre active recreation area is reserved for development northwest of the lake. This element is a concern as it would possibly be a lighted facility and it would be difficult to screen the lights and parking from the lake trail, particularly from the dam prospect. The potential future development would have to be tightly regulated during design and development to assure prevention of siltation of the lake and degradation of water quality (eutrophication) from fertilizer run-off.

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Pool Mountain

With the Miller Tract acquired, the County has now assembled both flanks and the complete ridgeline of most of the “Mountain”, such that the ridge landform in its entirety can be experienced from base to top, from north to south, and (almost entirely) from west to east. The variety of topographic experience, from nearly cliff-like broken ground, to open forested groves offer a full range of visual experience to encourage exploration by trail users.

Taken together with the previous 485-acre tract, this land offers perhaps the most naturally beautiful passage of landscape that has ever been put aside for passive enjoyment anywhere in the County.

Program Elements

This site is already configured in a beautiful fashion. It meets nearly all of the park users needs with little need for large-scale intervention. Consequently, this site does not have to be a “made-land” undertaking where slopes, vegetation, and watercourses must be designed and constructed from unsuitable terrain. Park visitors must be accommodated to the extent that they may draw maximal inspiration and refreshment from their visit. The improvements made, while they may represent substantial cost or effort, must be subordinated to the overall landscape composition.

Vehicular Circulation

In general, circulation alignments are curvilinear in style, avoiding straight alignments. Gradients are to respect the terrain, seeking more gentle transitions between high and low points. Access driveways will be a parkway style with landscape-separated one-way 12-15 foot lane widths. The driveway is to be uncurbed, asphalt paved with a pervious profile as required for prior phases of this project.

Provide three vehicular access points, each gated: one to serve the Lakefront Activity area; another to serve the Large Group area; and a third to serve the Equestrian Parking Area below the dam on Mineral Springs Road.

Desired Parking Allotment for Proposed Park Facilities

<u>Facility</u>	<u>Parking Spaces</u>
Lakeshore Activity Area –paved	100
Large Group Parking (20 paved, 120 sodded gravel)	140
Bus Spaces at Large Group Parking – sodded gravel	3
<u>Equestrian Trailhead Horse Trailer Parking – sodded gravel</u>	<u>20</u>
TOTAL PARKING DEMAND	263

Large, naturally landscaped islands will break up the mass of the paved parking lots such that a tree canopy will develop to shade the entire parking area. Gates will be rustic timber style with

Little Mulberry Park Master Plan – Miller Tract Expansion

metal hardware similar to the earlier phase of this project. County required deceleration lanes and tapers will be required in the rights-of-way of each entry.

Paved Multi-Purpose Trail

An asphalt-paved, 12' wide, 2.2-mile loop will circulate around the lake. Equestrians will not be allowed on this loop. While the basic loop is ADA accessible, this must be confirmed by survey work during Phase I design, and transitions to parking areas must be provided. The paved trail will not have a center linestripe but will have ¼-mile distance markers.

Where the trail crosses 5 major tributary streams (including the Little Mulberry River) there are undersized culvert pipes or inadequate provision for the peak flows such that the trail is damaged at these points. Provide new crossings utilizing pipes, box culverts or bridge sections sized to pass the 25-year tributary flows to the lake and respective of the Phase I project budget. Provide suitable culverts at other segments of the perimeter trail where there are presently no culverts at critical locations.

Paved Phase I Trail Cross-Connector

A stabilized soil and aggregate blend, 10' wide, 3,100 foot link will be provided for maintenance access as well as pedestrian/bicycle use. The alignment appears to follow a very old roadbed and the historical origin could be interpreted. A most interesting element is a rustic stone box culvert and an intermittently flowing water stream that spills over a series of exposed stone ledges

Equestrian and Walking Trail

This trail system will be available to both equestrians and walkers, with equestrians having right-of-way. Equestrian users must park their trailers at the equestrian parking lot on Mineral Springs Road. Walkers may not use the equestrian trailhead parking lot, but may access the trail from a number of points within the park via the paved multi-purpose trail system.

A stabilized aggregate trail provides access through the Pool Mountain ridge and other woodlands south of the lake. The trail loops will be 4 feet wide where one-way travel is posted, and 6 feet wide on the two-way portions. The plan provides for an approximately 10 mile, 2-loop system, including switchbacks, with a 5.6-mile loop in the first phase, and a loop in later phases of 4.4 miles. In places, switchbacks with limited stone steps would be required to traverse steep transitions. At some switchbacks, rustic timber barrier fences would be required to prevent short-cutting (see photo next page).

The emphasis will be construction methods and materials that assure the provision of an all weather surface that does not require costly replacement of surfacing, and that resists rutting of the natural soil profile. Construction methods would include handwork and “Dingo” type power equipment. In no case would power equipment be allowed to plow out the trail subgrade profile such that tree roots are ripped. Instead, ditch-witch or other hand excavation may be used provided that tree roots, where encountered are cleanly cut and are not left exposed to open air

Little Mulberry Park Master Plan – Miller Tract Expansion

after cutting. Where large roots are evident (over 3" diameter) or root flares are visible near tree trunks then special bridging of such roots is required to include hand-raking of topsoil to the firm subsoil layer adjacent to the protected root. The rootzone would then be covered by non-woven geotextile fabric, and backfilled with a suitable gap-graded crushed aggregate bridge.

Hand root pruning, topsoil removal and stone aggregate beds, are among required elements in steep side-slope conditions where new trail alignments are proposed. Gap-graded crushed aggregate sub-surface layers and fine-textured surfacing are required for all weather performance. In lieu of quarry aggregates, in-situ or on-site borrow soils must be tested to confirm if they possess the correct physical properties for foundation, base or top course. Bulldozers and dump truck access will not be provided into the woodland environment. Special tree protection and erosion control measures are required during development.



L: Rustic Timber Switchback Barrier: R: One-Way Turnstyle

Where the trail traverses moderate slopes and open pastures minimal work is required, provided that proper soil texture for footing is confirmed.

Special signage for rules will be required at the equestrian trailhead. Along the trail, directional and rules signage will be needed as well. To reinforce the one-way trail use by equestrians, a rustic timber turnstile is required, configured to spin in only one direction (see photo above). Walkers would be able to walk in either direction, entering the equestrian trail through chutes designed to thwart bicycle riders who are banned from the trail.

Mown Pasture Areas

Of the pasture areas along Hog Mountain Road (roughly 55 acres), some portions will be regularly mowed (monthly) to an informal height of roughly 5-6". Adjoining areas will be maintained as tall pasture by annual mowing. A free-form pattern is reflected on the master plan for illustrative purposes only. In any event, the design must be confirmed by layout in the field.

Little Mulberry Park Master Plan – Miller Tract Expansion

The mow pattern will be preserved by setting steel pasture edge stakes.

Maintenance Area

A rustic-themed maintenance compound will be constructed in a prior phase at the existing park entry on Fence Road. Additional maintenance equipment, including boats for lake maintenance will be temporarily housed at the existing barn in the Lakeshore Activity Area. In a second phase of development of this area, a lakeshore pavilion to include boat slips will be provided.

Restroom Facilities

No new restroom facilities will be provided in Phase I. In Phase II three restroom buildings will be provided to serve each of the three park entry and activity areas: Equestrian, Lakeshore and Large Group. The 400 square-foot restrooms will be provided with three commodes/urinals per sex, for a total of 6 fixture units, required sinks and diaper changing stations. Design will be rustic-styled, similar to that of the prior phases of this park development.

Lakeshore Concession and Shelter

An existing concrete boathouse retaining wall appears to be well constructed on this site. This structure will remain through Phase I, but may either be demolished or incorporated into the larger pavilion proposed for Phase 2. The facility would include a sheltered boat dock at the lake level, and an open air shelter with enclosed concessions office and restroom set above the boat storage level. Design will be rustic-styled, compatible with that of the prior phases of this park development.

Restrooms at the pavilion would require a septic system. The steep, wooded lake embankment site may not be feasible without provision of a small package sewage ejector system to reach a septic field at the open pastures above the lakeshore pavilion.

The upper level floor structure must be set above the 100-year flood level of the SCS lake. Columns and foundations supporting the upper level must be designed to withstand potential flooding. ADA access to both levels must be provided.

Damage to the lakeshore area must be minimized by obtaining a detailed topographic and tree survey of the entire lakeshore activity area. The Phase I trail adjacent to the pavilion must be conceived to allow the use of the Phase I trail as access to the upper level of the Phase 2 lakeshore pavilion.

Small Rustic Picnic Pavilions

Four small shelters are proposed in support of the various activity areas within this part of the park. Each would be roughly 300 square feet and would comfortably house up to 2 picnic tables. Design will be rustic-styled, similar to that of the prior phases of this park development.

Little Mulberry Park Master Plan – Miller Tract Expansion

Large Group Pavilion

A large shelter suitable for groups of up to 200 people would be 60 feet in diameter and about 2,800 square feet. Adjacent pasture areas would be mown monthly and would be suitable for a wide variety of casual activities. Also, a small playground would be located nearby. The large shelter would be within 200 feet of a restroom building. Design will be rustic-styled, similar to that of the prior phases of this park development.

Cultural Heritage Remembrance Site

This element is a reserved area for a rustic themed outdoor sculpture, commemorative installation site. Cultural Heritage in this case refers to a wide range of interpretation from the prehistoric Native American period, historic Native American period, and European settlement period. While there is no specific historic event or cultural artifact associated with this particular site, the setting seems most suitable for quiet reflection on the various waves of human habitation associated with the park's overall context. The funds set aside in the Phase II budget for this element anticipate that additional resources may be sought for a regional cultural initiative to develop a suitable remembrance at this location.

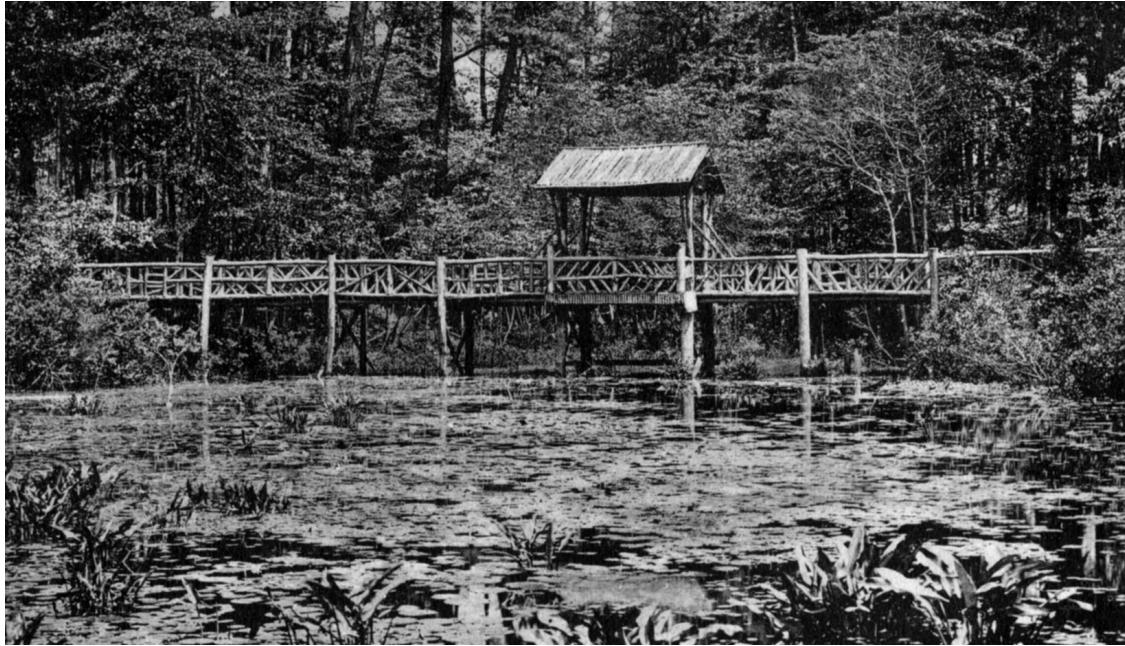
On-Site Residence

An existing caretaker's residence is located on the site near the existing Miller Residence. This could be made available as housing for a resident manager or park police officer during Phase I. In Phase II, a permanent residence would be constructed for this function when the existing caretaker's residence is demolished to free up space in the lakeshore activity area for a trail link from the Phase I parking lot to the Phase II outdoor classroom.

Miller House and Outbuildings

The Miller House will be demolished or otherwise removed during Phase I. All of the other existing structures currently extant at the Lakeshore Activity area will remain during Phase I and may be used by the staff but not the public. A temporary gravel lot will be developed in Phase I to provide staff parking. During Phase I the public will enter at the Pine Road gate and traverse a paved two-way divided parkway to a modest paved ADA accessible trailhead parking lot to reach the lakeshore trail and nearby fishing piers.

There will be temporary restroom facilities provided; either an existing restroom trailer owned by the county or an upgraded portable restroom with ADA units. In addition, during Phase I an existing toilet stall at the shop building will be modified to provide temporary ADA accessible bathroom facilities (unisex). During Phase I the existing septic fields and utility services that support the Miller House will be maintained to support the temporary restrooms in the vicinity. During Phase II, the remaining extant structures will be removed and the master plan configuration for the Lakeshore Activity area will be realized.



One of the fishing piers would be a narrow boardwalk with a sheltered area in the middle.

Fishing Piers

Six fishing piers are proposed, three in Phase I and three in Phase II. The piers would be wooden and of various configurations similar to the plan. Built on round wooden pilings extending into the water, each would have a wooden deck and railings similar to that developed in the earlier phase of this park development. Each would also include (in Phase 2) a modest covered portion for shade.

The fishing pier nearest the Lakeshore Activity area would supplement the outdoor classroom function. It would have a wooden deck stepped down to the water for those engaged in nature study at the lake. The deck would be less than 30" above the normal water level of the pond. While this would also be a fishing pier, it could be reserved exclusively for interpretive use during certain periods.

All of the piers would be subject to lake flooding conditions, so the design should provide for survival of the structural elements, decking and railings during flooding events. Furthermore, in the event of damage from floating debris or other treefall the design should allow for minimal downtime through the use of modular or easily replaced railings and decking.

Lake Activity Area Outdoor Classroom

A component of the lakeshore activity area, this is a Phase II element. The classroom would be a modest circular terrace of stabilized aggregate with a semi-circular stone seatwall surrounding one side to offer views of the lake. Seating for up to 30 people would be provided.

Lake Siltation Zone with Boardwalk

A meandering wooden boardwalk would provide interpretive access to a cove in the lake that has silted in over recent years. The re-growth of wetland vegetation here is an interesting area for nature study. There would be several blinds set up to allow close observation of wildlife activities.

Rustic timber poles would be set at the current edge of the silted area to record any increase in the limits of the siltation. In addition, the Phase I survey work would include a lakebed survey to provide the subsurface contours of the lake and help guide lake management strategies. Temporary stakes would be set at the silt zone edge as a part of the lakebed survey.

As development in the upstream watershed is anticipated to be largely concluded in the next five years a reassessment of silt dredging requirements would coincide with conclusion of the park development during Phase 2. A modest level of funds is provisioned for dredging the lake subject to performance of a second lakebed survey during Phase 2.

Furnishings and Signage

In general, furnishings and signage will be of a rustic-theme similar to that of the prior phases of this park development on the original 485-acre portion off of Fence Road.. A site identification sign and gate will be provided at each of three park entrances (two on Hog Mountain Road, one on Mineral Springs Road). A specially crafted park rules sign is required to identify hours of operation, and those uses or prohibitions specific to this. These rules would be in addition to standard park regulation postings.

Trail map and trail rules signage will be provided at an equestrian trailhead and lake trailhead kiosk during Phase I.

An \$80,000 Phase I allowance (\$40,000 Phase II) is set aside for the purchase of furnishings and maintenance equipment. Some of these items will be furnished and installed by the contractor, others by the Owner. Among the equipment to be purchased are: a lake boat; a “gator” type transport vehicle; and other maintenance equipment. Furnishings will include picnic tables, benches, waste cans and bike racks.

Perimeter and Parking Lot Security

Based on preliminary survey data, up to 14,114 feet of the site borders on adjacent property. There is evidence of unauthorized four-wheeler, poacher, and other access from various points. Fortunately, the acquisition of the Miller tract has reduced the border constraint of the adjacent Phase I Little Mulberry Park tract by roughly 7,500 feet to 17,500 feet. Most of the common border is already maintained in Barbed Wire. Many sections are in need of repair. The first 1,000 feet of barrier fence is provided in Phase I to be based on a prioritized assessment of security needs during Phase I design.

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As previously mentioned, the vehicular entry drives are all gated. The park will only be open during daylight hours except in the event of special events. Owner provided parking lot lighting is required to be controlled on a timer. Each parking lot may be outfitted with a remote control security camera to be implemented in Phase II.

Wildlife and Fisheries Management

In conjunction with appropriate fisheries management professionals, develop plans for the lake fishery to identify management activities that may contribute to a sustainable fishery. Once a lake bed survey is in hand after Phase I, a siltation management strategy can be developed.

Fishing will only be allowed from six piers or from County leased boats after Phase II. In Phase I, only three piers will be developed. Bank/wader fishing will not be permitted and private boats will not be allowed. County-owned boats will be either electric or row boats to keep noise and pollution to a minimum.

As adjacent lands are developed, more land mammals may seek refuge in the park, placing the natural habitat under intense pressure. Beaver have already created management problems where the tributary streams feed into the lake. They have built dams, causing backwater flooding that threatens the structural integrity of the perimeter trail dikes. Fencing may be necessary or, other management practices such as feeding, trapping, etc. may need to be considered for deer control in the future.

Karina Miller Nature Preserve

As a memorial to the Miller family who sold the 404-acre property to Gwinnett County, a 200-acre section of largely undisturbed terrain and the entire bed of the present pool of the lake will be specially designated as the Karina Miller Nature Preserve. The most sensitive area of the site – the north flank of Pool Mountain is set aside within the Preserve. With the exception of the trail development proposed herein, this area will be specially protected from further development (see Diagram).

Border Planting

Plantings near the property lines are encouraged to create a transition between the park use areas and adjacent property. This will ensure a pleasant park user experience and also assure privacy. This is not meant to be a continuous effect, but rather to be concentrated only where absolutely needed.

Native evergreen species such as Hawthorn, Red Cedar and American Holly should be used rather than introduced species. The master plan graphic reflects this screen planting, particularly in terms of securing the viewshed from the dam and lakeshore activity area.

Little Mulberry Park Master Plan – Miller Tract Expansion

Utilities

Stormwater System: The construction plans must be designed to allow for recapture of water arising from land disturbance through infiltration. This would include discretely placed, depressed, planted infiltration bays downstream of the proposed buildings and parking facilities. Pavements are to be uncurbed to allow sheetflow off of the surface.

In addition, the paved and loose surface trails are to be carefully situated to include provision for surface water run-off controls such as trail dips and culverts sized to properly handle more concentrated water. If for any reason, trail construction results in the concentration of water flow where previously sheet flow had prevailed, then special measures are required to redistribute the artificially concentrated water safely into the natural landscape.

Potable Water Distribution: Provide new water service originating at Hog Mountain and Mineral Springs Roads together with fire protection water distribution as required to protect proposed structures.

Sanitary System: For initial development provide a septic field to serve each restroom, sized as appropriate for the anticipated user population. Locate restrooms so as not to foreclose on the possible future provision of sanitary sewer by the County across the north side of the lake.

Telephone/Communications: Arrange for the extension of these services to the appropriate building locations on site. Provide a 911 phone service at the Lakeshore Activity parking area

Electricity: Arrange for the extension of these services to the appropriate building locations on site. As this project is not a large electrical power user, work with the local utility to identify the costs for this service to be paid by the Owner.

Park Expansion Opportunities

There are several adjoining tracts for which outright acquisition or negotiated conservation/access easements are encouraged. Such expansion could enable more suitable trail alignments, equestrian trail opportunities, better viewshed control, or additional trailhead development opportunities.

Any opportunity to extend the park boundaries, at least as far as the bounding roadways, is encouraged to assure a more successful park configuration. In the interim, fences may be necessary to control egress from adjacent properties in specific areas to be determined in the future.

The **Context Diagram** (see page 4) reflects adjacent parcelization. Hopefully, larger adjacent tracts can be acquired and added to the park. In addition, adjacent smaller, single-family residential tracts should be considered for acquisition if they are offered for sale.

6.0 Development Budget

The Phase I program list is based on a February, 2002 estimate of approximately \$1,900,000 construction cost and includes:

First Phase

Insurance, Bonds, other Req'ts.	\$75,000
Fencing (Caretaker & Perimeter)	\$10,000
Equestrian/Walking Trail System	\$654,480
Other Paths and Sidewalks	\$50,722
Lake Trail Paving/Culverts	\$371,860
Lake Piers (3) / Kiosk	\$109,000
Initial Lakeshore Drives, Walks & Parking	\$315,790
Contingency	\$50,148
Design Fees	\$130,000
Supplementary Topo and Lake Bed Survey	\$35,000
Equipment Allowance	\$80,000
<u>Testing and Utility Location</u>	<u>\$18,000</u>
Sub-Total	\$1,900,000

The Second Phase list contained the balance of park program features the Committee believed should be in the next construction phase or phases as additional funds become available

Second Phase

Insurance, Bonds, other Req'ts.	\$155,000
Perimeter Security	\$78,800
Equestrian/Walking Trail System	\$716,570
Other Paths and Sidewalks	\$47,934
Lake Trail Spurs / Cultural Area / Shelter	\$140,650
Boardwalk / Piers (3) w/ Roofs & Approaches	\$361,000
Caretaker's Residence	\$213,350
Activity Shelter w/ Restroom/Concession	\$700,000
Lakeshore Activity Area Completion	\$757,800
Large Group Shelter Area	\$1,076,846
Security Cameras	\$30,000
Contingency, w/ Lake Siltation Removal	\$1,110,000
Design Fees	\$316,077
Supplementary Survey	\$25,000
Furnishings	\$40,000
<u>Testing and Utility Location</u>	<u>\$14,000</u>
Sub-Total	\$5,663,027

A more detailed estimate is included in the **Appendix A**.

7.0 *Alternative Development Concepts and Master Plan*

A total of three alternative development concepts were prepared and presented to the Steering Committee. Following this, a hybrid plan, called the Preliminary Master Plan, was developed to reflect a consensus approach to the Park's development. With further revision, the Final Master plan was developed. The draft was slightly refined to prepare the Master Plan.

Concept Plans A, B, and C

All three concept plans (see diagrams **Concept A**, **Concept B**, **Concept C**) represent identical development programs, but vary in terms of spatial layout, and adjacency. The differences in each concept relate to layout of the north lakeshore area, particularly with regard to location of the large group shelter element. After much discussion, Concept B was selected for refinement.

Extensive objections were voiced in opposition to the 40-acre active recreation reserve area. The objections are in regards to noise and degradation of the pastoral open-space park viewshed. It was observed that at night, if lighted, the lights would disrupt the viewshed from the high pasture celestial observation area designated for the 485-acre Phase I park area. The Steering Committee suggested that lighted, active sports facilities are better located in proximity to school sites. It was observed that the cost savings of acquiring and developing a more economical (flatter, pasture) site could justify the purchase of a more economically suitable active recreation site in this area of the county. The Steering Committee members were determined to submit their concerns before the Recreation Authority and Board of Commissioners beyond the scope of their work on this Master Plan.

Teresa Cantrell advised staff should meet with Pool Mountain LLC Developer Brian Cohen to review the proposed subdivision plan where adjacent to the park and confirm the nature of the proposed equestrian subdivision and possible access/equestrian safety issues.

Staff suggested that a silt management study is needed to assess how to handle the ongoing lake siltation problem (10 acres has been lost since the lake was built) and identify cost options for various strategies.

The pavement for the park internal linkage to the Phase I paved trail loop along the old road bed was discussed. It was desired to use native aggregates stabilized for suitability as a vehicular surface while keeping the natural feel and look of a dirt/gravel trail bed as presently evident. Both DCS staff and Steering Committee members suggested that the preliminary master plan should:

- Relocate the large group shelter and parking to the higher ground in the northwest meadow versus at mid-meadow.
- School bus parking noted to be accommodated in the gravel overflow parking lot at the large group shelter.

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- At fishing piers, provide at six locations (there were 3 shown on the concept plans), roughly 400-500 square feet each, and provide some as a deck parallel to the bank and provide at each a small shade shelter (roughly 200 square feet). Also provide piers out to depth of 4-6 feet. At one pier location near the southeast creek tributary cove, cross the water in the form of a bridge with a shade shelter at the midpoint. One pier should be near the outdoor classroom on the north lakeshore.
- On the little remnant island, provide an architectural folly, such as an outline gazebo/shelter for interest.
- Relabel on the key “P” for Playground, label Patrick and Pine Roads.
- Relabel the Equestrian Trail as an Equestrian/Walking Trail. The trail will be joint-use with equestrians having the right-of-way.
- Indicate a cross-trail from the Phase I Woodland Trail to the southwestern portion of the Equestrian/Walking trail for walkers only.
- Provide rustic one-way turnstiles and walk-only access fences where needed to reinforce trail directional and equestrian exclusions.
- Show a boardwalk at the northwest silted lake bed for interpretive exploration purposes.
- In the open pasture to remain in the northeast, manage as native warm season grass and wildflower meadow, maintaining mown paths as per prior Phase I master plan.
- Shelter at the dam overlook to be just a rest spot for trail users, not a 4-6 picnic table shelter (provide 1-2 picnic tables).
- Graphically indicate limits of 200-acre nature preserve part(s) of project per staff indication.

Preliminary Master Plan

The Preliminary Master Plan ([see graphic](#)) was formatted based on comments by the Steering Committee and Staff. The plan was recommended with only minor plan changes as a final master plan for the next meeting:

- Move the large group shelter areas playground closer to the shelter.
- Re-characterize “M” on the Key as “Cultural Heritage Remembrance Site”.

Based on subsequent investigation by CERULEA, the entry drive of the large group shelter area was relocated in response to the proposed development of a sub-division entrance onto Hog Mountain Road (revision to provide adequate horizontal separation).

CERULEA also confirmed with County DPU staff that sanitary sewer availability was a long-term indefinite given costs and logistical problems of a required pump station to transfer wastewater effluent from the lower reaches of the Mulberry River watershed in Gwinnett County to the Ivy creek wastewater basin. Consequently, all sanitary facilities proposed for the park will have to be on-site subsurface infiltration (septic) systems.

Final Master Plan

CERULEA formatted the final graphic to represent the entire 890 acres, showing the prior master plan elements from the initial 485-acre park development.

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The final plan (see **Graphic**), and cost estimate (see **Appendix**) were presented on January 9, 2002 to the Steering Committee. There were no plan refinements requested by the Steering Committee. The discussion of the cost estimate was the focus of the meeting. A total Phase I budget was presented by CERULEA, estimated at \$2.036 million exclusive of Program Management fees. Roughly \$1.9 million is available for the Phase I development of Little Mulberry Park. The cost estimate was reviewed and various changes were made to bring the project into budgetary compliance for Phase I:

- Reduce Equestrian Trail widths to 4 feet (1-way) and 6 feet (2-way).
- Reduce Phase I Landscape Plantings to \$28,000 at the trail and lake activity areas.
- Add a 5/8" meter with hose bib to supply the equestrian area - \$3,000 to Phase I.
- Defer all covered shelters on the 3 Phase I piers to Phase II
- Defer Phase I Trail Distance Markers to Phase II.
- Add \$4,000 for temporary fencing at the existing Caretaker's House.
- Eliminate water quality weirs at the Lakeshore Activity area.

It was discussed that there is no provision for new restroom facilities in the Phase I budget. The Owner may elect to provide a temporary restroom trailer or may rent other temporary facilities. The plan was revised prior to the Recreation Authority presentation to reflect the new location of the Pine Road intersection with Hog Mountain Road such that the Lake Activity area entry drive would properly align with the new location.

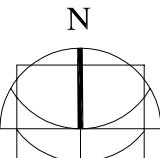
The final color master plan was prepared and presented to the Recreation Authority on February 21, 2002, and many of the Steering Committee members were in attendance.

Concept A

Little Mulberry Park Master Plan - Phase II

0 400 800

1600



Lakefront Activity Area

Divided parkway access to 80 space paved lot, 20 paved space lake trail ADA lot, 20 paved spaces for Large Shelter and 120 overflow space gravel lot. Area includes ADA path loop, outdoor classroom, 1 large group shelter (with nearby restroom and playground), 2 small shelters, and a boat rental concession with sheltered area for boats, shelter area and concession office 20 feet above lake level (out of hazard area).

Reserved Area

Future 40-acre soccer development area. Site plan to achieve maximal screening and separation of active sport uses from balance of park.

Pedestrian Linkage

Paved trail to link to subdivisions along Hog Mountain Road.

Lakeshore Trail

Lake Perimeter Trail Loop 2.2 Miles, 12' Asphalt. Provides access to 3 fishing piers.

Equestrian Trail

10 miles (5.6 mile east loop and 4.4 mile west loop) Alignment follows existing trails or negotiates steepest areas with switchbacks. Dotted sections are one-way and triangle sections are two-way.

- F Fishing Pier (no Bank Fishing allowed)
- W Lakeshore Concessions/Shelter
- C Children's Playground
- R Restroom Building
- G Large Group Shelter
- S Small Shelter
- O Outdoor Classroom
- M Native American's Mound
- C Caretakers Residence

See prior Master Plan for this Area

Lake View Shelter

Shelter for 4-6 picnic tables with restroom and 20 paved parking spaces on other side of grass spillway. Restroom can also be used by equestrian trail users. Structures are located above the SCS flood hazard contour.

Equestrian Trailhead

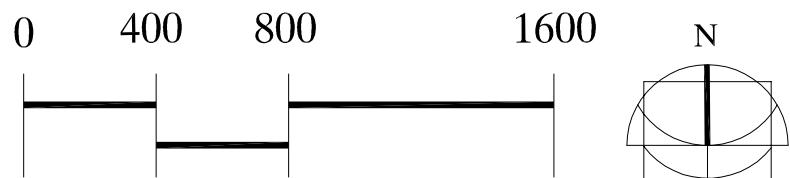
Gated parking area for equestrian trailers with restroom, trail map kiosk and watering area. Confirm spillway safety req's and soil suitability.

Multi-Use Connector

Paved 10' connector trail follows older dirt roadbed

Concept B

Little Mulberry Park Master Plan - Phase II



Large Group Area

One-way, divided parkway access off of road to future active development area. Parking to include 20 paved spaces for Large Shelter and 120 overflow space gravel lot. Area includes 1 large group shelter with nearby restroom and playground. Trail access to lake trail provided.

Pedestrian Linkage

Paved trail to link to subdivisions along Hog Mountain Road.

Lakeshore Trail

Lake Perimeter Trail Loop 2.2 Miles, 12' Asphalt. Provides access to 3 fishing piers.

Equestrian Trail

10 miles (5.6 mile east loop and 4.4 mile west loop) Alignment follows existing trails or negotiates steepest areas with switchbacks. Dotted sections are one-way and triangle sections are two-way.

- F Fishing Pier (no Bank Fishing allowed)
- W Lakeshore Concessions/Shelter
- C Children's Playground
- R Restroom Building
- G Large Group Shelter
- S Small Shelter
- O Outdoor Classroom
- M Native American's Memorial
- C Caretakers Residence

See prior Master Plan for this Area

Lakefront Activity Area

One-way, divided parkway access to 80 space paved lot, 20 paved space lake trail ADA lot. Area includes ADA path loop around open meadow, outdoor classroom, restroom, 2 small shelters, and a boat rental concession with sheltered area for boats, shelter area and concession/office 20 feet above lake level (out of hazard area).

Lake View Shelter

Shelter for 4-6 picnic tables with restroom and 20 paved parking spaces on other side of grass spillway. Restroom can also be used by equestrian trail users. Structures are located above the SCS flood hazard contour

Equestrian Trailhead

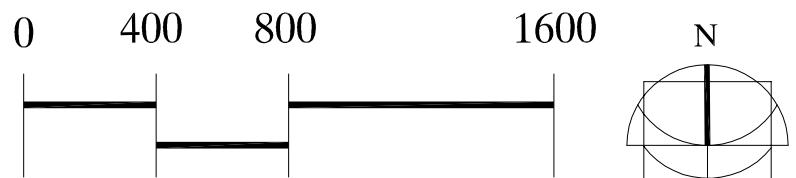
Gated parking area for equestrian trailers with restroom, trail map kiosk and watering area. Confirm spillway safety rea'ts and soil suitability.

Multi-Use Connector

Paved 10' connector trail follows older dirt roadbed

Concept C

Little Mulberry Park Master Plan - Phase II



Lakefront Activity Area

One-way, divided parkway access to 80 space paved lot, 20 paved space lake trail ADA lot. Area includes ADA path loop around open meadow, outdoor classroom, restroom, 2 small shelters, and a boat rental concession with sheltered area for boats, shelter area and concession office 20 feet above lake level (out of hazard area).

Pedestrian Linkage

Paved trail to link to subdivisions along Hog Mountain Road.

Lakeshore Trail

Lake Perimeter Trail Loop 2.2 Miles, 12' Asphalt. Provides access to 3 fishing piers.

Equestrian Trail

10 miles (5.6 mile east loop and 4.4 mile west loop) Alignment follows existing trails or negotiates steepest areas with switchbacks. Dotted sections are one-way and triangle sections are two-way.

- F Fishing Pier (no Bank Fishing allowed)
- W Lakeshore Concessions/Shelter
- C Children's Playground
- R Restroom Building
- G Large Group Shelter
- S Small Shelter
- O Outdoor Classroom
- M Native American's Memorial
- C Caretakers Residence

See prior Master Plan for this Area

Large Group Area

One-way, divided parkway access off of Hog Mountain Road. Parking to include 40 paved spaces for Large and Small Shelter and 120 overflow space gravel lot. Area includes 1 large group shelter with nearby restroom and playground. Trail access to lake trail provided.

Lake View Shelter

Shelter for 4-6 picnic tables with restroom and 20 paved parking spaces located across spillway at group shelter area together with Restroom. Structures are located above the SCS flood hazard contour

Equestrian Trailhead

Gated parking area for equestrian trailers with restroom, trail map kiosk and watering area. Confirm spillway safety rea's and soil suitability.

Multi-Use Connector

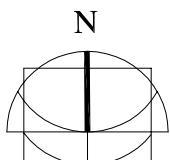
Paved 10' connector trail follows older dirt roadbed

Preliminary Master Plan

Little Mulberry Park Master Plan - Phase II

Miller Tract Expansion & Karina Miller Nature Preserve

0 400 800 1600



Large Group Area

One-way, divided parkway access off of road to reserved area. Parking to include 20 paved spaces for Large Shelter and 120 overflow space gravel lot with space for bus parking. Area includes 1 large group shelter with nearby restroom and playground. Trail access to lake trail provided.

Pedestrian Linkage

Paved trail to link to subdivisions along Hog Mountain Road.

Lakeshore Trail

Lake Perimeter Trail Loop 2.2 Miles, 12' Asphalt. Provides access to 6 fishing piers.

Equestrian/Walking Trail

10 miles (5.6 mile east loop and 4.4 mile west loop) Alignment follows existing trails or negotiates steepest areas with switchbacks. Dotted sections are one-way and triangle sections are two-way. Provide fences to prevent switchback cross-cuts, and one-way equestrian turnstiles. Provide walk-only access chutes to exclude horses and bikes from cross-linking where trails adjoin.

- F Fishing Pier (6 ea., no Bank Fishing allowed)
- W Lakeshore Concessions/Shelter
- B Boardwalk @ Lake Siltation Area
- P Children's Playground
- R Restroom Building
- G Large Group Shelter
- S Small Shelter
- O Outdoor Classroom
- M Native American's Memorial
- C Caretakers Residence

See prior Master Plan for this Area

Lakefront Activity Area

One-way, divided parkway access to 80 space paved lot, 20 paved space lake trail ADA lot. Area includes ADA path loop around open meadow, outdoor classroom, restroom, 2 small shelters, and a boat rental concession with sheltered area for boats, shelter area and concession/office 20 feet above lake level (out of hazard area).

Lake View Shelter

Shelter for 2 picnic tables to serve lake trail users. Parking and restroom not provided. Structure is located above the SCS flood hazard contour.

Equestrian Trailhead

Gated parking area for equestrian trailers with restroom, trail map kiosk and watering area. Confirm spillway safety req's and soil suitability.

Nature Preserve

Dashed line represents limits of 200-acre Karina Miller Nature Preserve to include lake and steep sloping land to the south

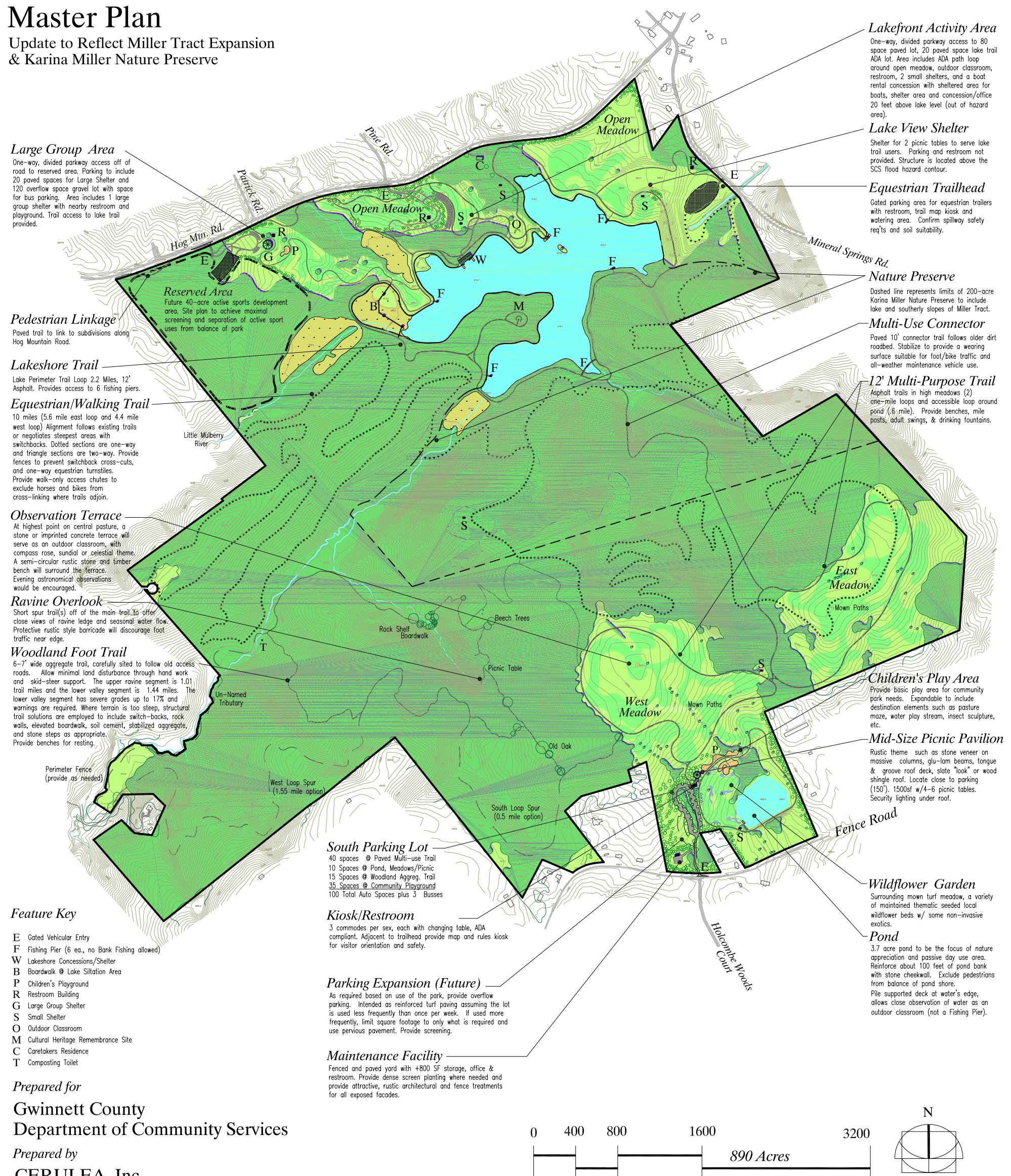
Multi-Use Connector

Paved 10' connector trail follows older dirt roadbed. Stabilize to provide a wearing surface suitable for foot/bike traffic and all-weather maintenance vehicle use.

LITTLE MULBERRY PARK MASTER PLAN

Master Plan

Update to Reflect Miller Tract Expansion
& Karina Miller Nature Preserve



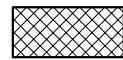
Prepared for

Gwinnett County
Department of Community Services

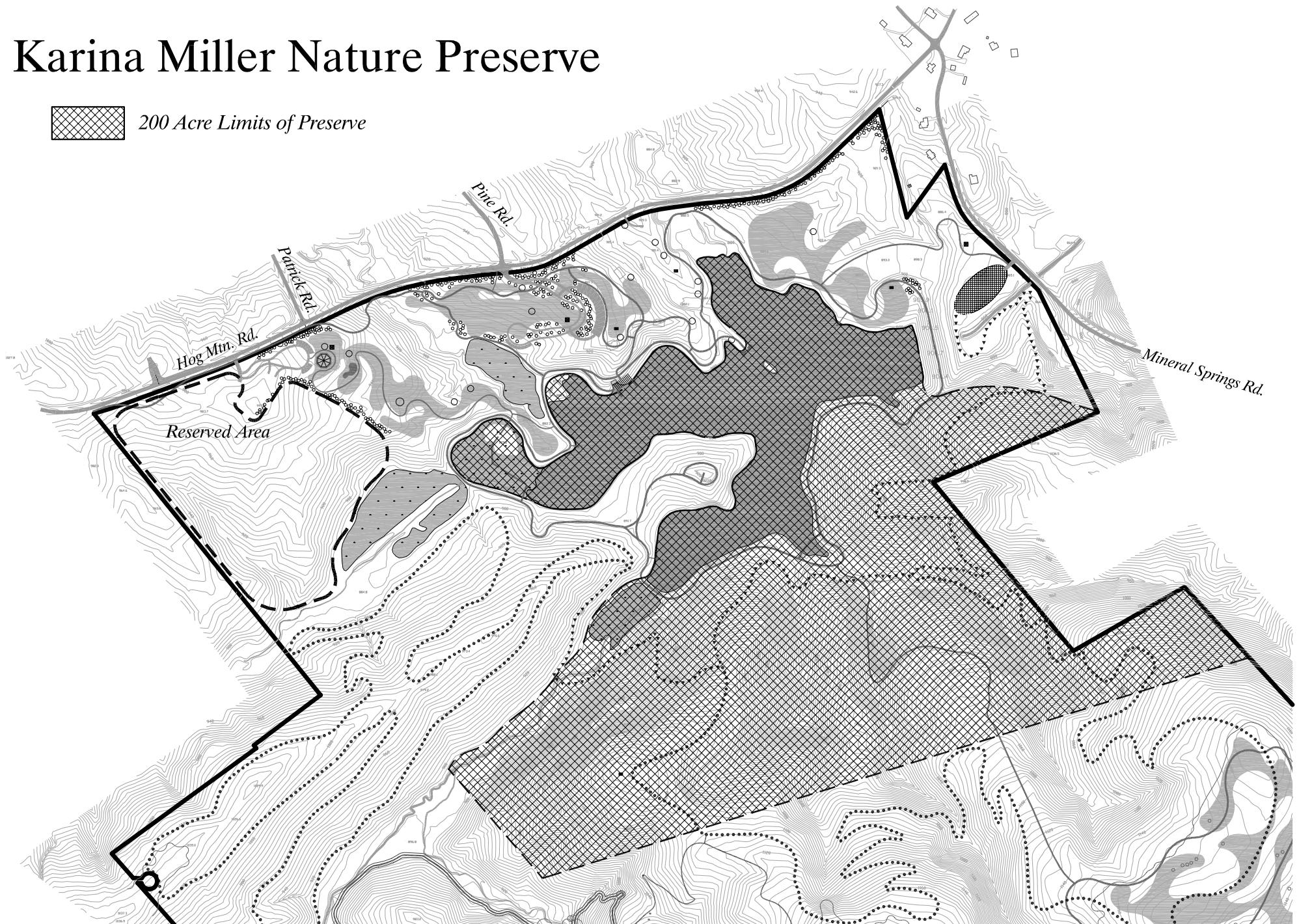
Prepared by

CERULEA, Inc.

Karina Miller Nature Preserve



200 Acre Limits of Preserve



Appendix A: Little Mulberry Park Master Plan - Miller Tract Expansion & Karina Miller Nature Preserve

Gwinnett County Dept. of Community Services

Master Plan Cost Estimate

Prepared by: CERULEA Incorporated

03/25/02

	Description	Quantity	Unit Price	Phase I	Phase II
	Insurance Cost/Bond Cost			\$50,000.00	\$120,000.00
	Owners Special Requirements, MultiPhase (trailers, etc.)			\$25,000.00	\$35,000.00
	<i>Site Preparation/Staking typically included in each category</i>				
	Perimeter Security	\$78,800			
	Perimeter Hog Wire Fence - Maintain Existing (critical area repair in Phase I)	14114.00	\$6.00 LF	\$6,000.00	\$78,800.00
	Equestrian/Walking Trail System	\$1,371,050			
	Phase I Trail				
	Two-Way Trail - 6' wide, New Side-Slope	4696.00	\$28.00 LF	\$131,488.00	
	Two-Way Trail - 6' wide, Gentle Terrain	1859.00	\$7.50 LF	\$13,942.50	
	One-Way Trail - 4' wide,-New Side Slope	10085.00	\$19.00 LF	\$191,615.00	
	One-Way Trail - 4' wide, Gentle Terrain	6224.00	\$6.00 LF	\$37,344.00	
	Hardscape 10 Culverts, 70 Cross Drains, 32 Switchback Steps, 16 Switchback Fences	1.00	\$89,000.00 LS	\$89,000.00	
	Phase II Trail				
	Two-Way Trail- 6' wide, New Side-Slope	2326.00	\$30.00 LF		\$69,780.00
	Bridge over Tributary Water w/ Abutments	1.00	\$32,000.00 LS		\$32,000.00
	One-Way Trail - 4' wide, New Side Slope	16515.00	\$20.00 LF		\$330,300.00
	Hardscape 80 Cross Drains, 10 Switchback Steps, 7 Switchback Fences	1.00	\$48,500.00 LS		\$48,500.00
	Landscape Planting/Seeding Trail Verges	1.00	\$42,000.00 LS	\$12,000.00	\$30,000.00
	Woodland Trail Connector	120.00	\$32.00 LF		\$3,840.00
	Parkwide Dumpster Pad & Rustic Gate	1.00	\$900.00 EA	\$900.00	
	Trail Interpretive Signage/Small Kiosk Package/Route Markers	1.00	\$30,000.00 LS	\$12,000.00	\$12,000.00
	Small Trail Shelter (space for 2 tables)	300.00	\$75.00 SF		\$22,500.00
	Decel Lane Heavy-Duty Asphalt Paving	600.00	\$26.00 SY	\$15,600.00	
	Asphalt Paving - Pervious Driveway	260.00	\$20.00 SY	\$5,200.00	
	10' Asphalt Path to Lake Loop for Service Access	1800.00	\$14.25 SY		\$25,650.00
	Turf-Stabilized Gravel Equestrian Parking - 20 Trailer Capacity	8300.00	\$12.00 SY	\$99,600.00	
	Decel Concrete Curb and Gutter (limit to tight curves)	310.00	\$9.00 LF	\$2,790.00	
	Site Preparation / Grading/ Erosion Control @ Trailhead	1.00	\$40,000.00 LS	\$40,000.00	
	Restroom at Open Meadow, 400 sf, porta-poties during Phase I	1.00	\$108,000.00 EA		\$108,000.00
	Small Septic Field	1.00	\$16,000.00 LS		\$16,000.00
	Electrical Service/Security Light Allowance	1.00	\$8,000.00 LS		\$8,000.00
	Water Service Allowance/1" Meter - Phase 2 (5/8" meter Phase I)	1.00	\$10,000.00 LS	\$3,000.00	\$10,000.00
	Other Paths and Sidewalks	\$98,655			
	10' Asphalt Path from Lake Activity Area to NW Corner Hog Mtn. Rd.	2662.00	\$14.25 SY		\$37,933.50
	Drainage/Signage - Lake Activity Area to NW Corner Hog Mtn. Rd.	1.00	\$10,000.00 LS		\$10,000.00
	10' Asphalt Path from Meadow Loop to Pine Road Crosswalk	167.00	\$14.25 SY	\$2,379.75	
	Carriage Trail Link 10' wide - Stabilized Natural Aggregate, 3,190 lf	3453.00	\$14.00 SY	\$48,342.00	

Little Mulberry Park Master Plan - Miller Tract					PAGE 2
Description		Quantity	Unit Price	Phase I	Phase II
Lake Trail		\$982,511			
12' Asphalt Trail - 11,731 lf		15650.00	\$14.25 SY	\$223,012.50	
Grade & Backfill for Asphalt Trail System - Average Cost		11731.00	\$8.00 LF	\$93,848.00	
Asphalt Trail Spurs to Cultural Heritage Area and Boat Dock		1800.00	\$14.25 SY		\$25,650.00
Small Trail Shelter (space for 2 tables)		300.00	\$75.00 SF		\$22,500.00
Cultural Heritage Remembrance Area		1.00	\$60,000.00 LS		\$60,000.00
Boardwalk, 670 lf x 6' wide w/ 3 blinds, and silt marker poles		4400.00	\$35.00 SF		\$154,000.00
Ph. I Piers - Shelter Portions on short piers		900.00	\$40.00 SF		\$36,000.00
Ph. I Piers - Open Deck w/ 2 short piers and one horizontal pier		2400.00	\$35.00 SF	\$84,000.00	
Ph. II Piers - Shelter Portions of short piers and island folly		900.00	\$40.00 SF		\$36,000.00
Ph. II Piers - Decks w/ 2 short piers & cove boardwalk pier		3000.00	\$35.00 SF		\$105,000.00
Stabilized Approach to Piers			LS	\$10,000.00	\$15,000.00
Steps to Pier - SE Bank		1.00	\$15,000.00 LS		\$15,000.00
Selectively Clear/Grade Asphalt Trails in Woods		1600.00	\$17.50 LF		\$28,000.00
Trail Distance Markers and Route Markers		10.00	\$450.00 EA		\$4,500.00
Stormwater Culverts - Large Box Culverts, also crossdrains		1.00	\$55,000.00 LS	\$55,000.00	
Large Trailhead Kiosk		1.00	\$15,000.00 LS	\$15,000.00	
<i>Siltation Removal not included in estimates</i>					
Caretaker's Residence (use existing caretaker residence in Phase I)		\$213,350			
House - new construction - modest w/ rustic detailing, porch		1600.00	\$110.00 SF		\$176,000.00
Asphalt Driveway		300.00	\$14.50 SY		\$4,350.00
Water Service - Residential Meter/Piping to House		1.00	\$3,500.00 LS		\$3,500.00
Septic Field - Residential 1500 Gallon		1.00	\$15,000.00 LS		\$15,000.00
Landscape/Clear/Erosion Control/Grade Allowance		1.00	\$12,000.00 LS		\$12,000.00
Fenced Yard - Hog Wire and Gates		1.00	\$2,500.00 LS		\$2,500.00
Temporary Phase I Fenced Yard @ Existing House		1.00	\$4,000.00 LS	\$4,000.00	
Lakeshore Activity Area		\$1,773,590			
Restroom at Open Meadow, 400 sf (Porta Potty Phase I)		1.00	\$108,000.00 EA		\$108,000.00
Activity Shelter/Concession/Restroom - 3000sf 20' above boat storage		1.00	\$700,000.00 LS		\$700,000.00
Small Trail Shelter (space for 2 tables, 2 shelters)		600.00	\$75.00 SF		\$45,000.00
Outdoor Classroom - Rustic Benches and Stabilized Agg. Paving		800.00	\$40.00 SF		\$32,000.00
Pedestrian Hardscape (Perv. Conc. Walks, CIP Steps, Seatwalls)		1.00	\$55,000.00 LS	\$15,000.00	\$60,000.00
Decel Lane Heavy-Duty Asphalt Paving		600.00	\$26.00 SY	\$15,600.00	
Asphalt Path - Meadow Loop and to Lake		6483.00	\$14.25 SY		\$10,000.00
Allowance for temporary paths/bath stall addition to shop building		1.00	\$25,000.00 LS	\$25,000.00	
Pervious Asphalt Paving - 20 car parking & driveways		4220.00	\$20.00 SY	\$84,400.00	
Temporary Gravel Overflow - Phase I for 40 spaces		2000.00	\$7.00 SY	\$14,000.00	
Pervious Asphalt Paving - 80 car parking lot and connector aisle		3350.00	\$20.00 SY		\$67,000.00
Pavement Marking/Striping @ Parking		1.00	\$700.00 LS	\$700.00	\$700.00
Wheelstops @ Parking		100.00	\$30.00 EA	\$600.00	\$2,400.00
Concrete Curb and Gutter (limit to critical areas only)		600.00	\$9.00 LF	\$5,400.00	\$10,000.00
Decel Concrete Curb and Gutter (limit to tight curves)		310.00	\$9.00 LF	\$2,790.00	
Septic System (peak use days w/ lift for lake activity pavilion)		1.00	\$36,000.00 LF		\$36,000.00

Little Mulberry Park Master Plan - Miller Tract					PAGE 3
Description		Quantity	Unit Price	Phase I	Phase II
Lakeshore Activity Area (continuation)					
1.5" Meter w/ Water/Backflow Impact Fees	1.00	\$10,000.00	LS		\$10,000.00
Potable Water Piping 2"	1100.00	\$12.00	LF		\$13,200.00
Potable Water Piping 1" (drinking fountains)	900.00	\$8.00	LF		\$7,200.00
Drinking Fountain outdoor classroom w/ dog bowl @ drain basin	1.00	\$3,500.00	EA		\$3,500.00
Fire Hydrant - Lakeshore Pavilion Area	1.00	\$2,500.00	EA		\$2,500.00
8" DIP Fire Main	600.00	\$30.00	LF		\$18,000.00
Site Electrical/Parking Lot Lighting/Phone Cabling	1.00	\$30,000.00	LS	\$12,000.00	\$18,000.00
Clean-up/ Fence Removal/Demolition			LS	\$12,000.00	\$20,000.00
Clearing: Chipping/Spreading - entry drive/parking area	0.25	\$6,000.00	AC	\$1,500.00	\$12,000.00
Earthwork - Drive/Shelter/Play Area/Path	18000.00	\$3.00	CY	\$38,000.00	\$54,000.00
Tree Protection - fencing save critical areas	4000.00	\$1.25	LF	\$5,000.00	\$5,000.00
Temporary/Permanent Grassing	15.00	\$3,500.00	AC	\$12,000.00	\$40,500.00
Landscape Planting	1.00	\$72,000.00	LS	\$16,000.00	\$56,000.00
Storm Piping - ROW Culvert System	1.00	\$40,000.00	LS	\$15,000.00	\$25,000.00
Storm Piping -Roof Drains/Headwalls/Inlets	1.00	\$28,000.00	LS	\$12,000.00	\$16,000.00
Low Dry Weirs w/ Stone Checkwalls - Water Quality	300.00	\$200.00	LF		\$60,000.00
Erosion Control - all measures	10.00	\$3,000.00	AC	\$15,000.00	\$15,000.00
Stabilized Aggregate Pads (Tables purchased direct by Owner)	12.00	\$400.00	EA		\$4,800.00
Rustic Park Entry Gate	1.00	\$3,000.00	EA	\$3,000.00	
Park Entry Sign Pylon	1.00	\$7,800.00	EA	\$7,800.00	
Vehicular/Rules/Directional Signage	1.00	\$9,000.00	LS	\$3,000.00	\$6,000.00
Large Group Shelter with Sitework/Hardscape/Landscape		\$1,076,846			
Restroom (400 sf ea)	1.00	\$108,000.00	EA		\$108,000.00
Large Group Shelter - 60' Diameter	2800.00	\$120.00	SF		\$336,000.00
Small Playground	1.00	\$80,000.00	LS		\$80,000.00
Pedestrian Hardscape (Perv. Conc. Walks, CIP Steps, Seatwalls)	1.00	\$35,000.00	LS		\$35,000.00
Decel Lane Heavy-Duty Asphalt Paving	600.00	\$26.00	SY		\$15,600.00
Asphalt Paths to Lake Loop	3625.00	\$14.25	SY		\$51,656.25
Turf-Stabilized Gravel Overflow/Bus Parking - 120 Spaces	3700.00	\$12.00	SY		\$44,400.00
Pervious Asphalt Paving - 20 car parking / driveways	2705.00	\$20.00	SY		\$54,100.00
Pavement Marking/Striping @ Parking	1.00	\$700.00	LS		\$700.00
Wheelstops @ Parking	140.00	\$30.00	EA		\$4,200.00
Concrete Curb and Gutter (limit to tight curves)	1000.00	\$9.00	LF		\$9,000.00
Decel Concrete Curb and Gutter (limit to tight curves)	310.00	\$9.00	LF		\$2,790.00
Large Group Septic System (high peak use days)	1.00	\$36,000.00	LF		\$36,000.00
1.5" Meter w/ Water Impact Fees/backflow - Large Shelter	1.00	\$10,000.00	LS		\$10,000.00
Potable Water Piping 2"	200.00	\$12.00	LF		\$2,400.00
Potable Water Piping 1" (drinking fountains)	200.00	\$8.00	LS		\$1,600.00
Drinking Fountain near playground - Non-Freeze w/ Dog Bowl	1.00	\$3,500.00	LS		\$3,500.00
Hydrant - Group Shelter Area	1.00	\$2,500.00	EA		\$2,500.00
8" DIP Fire Main	200.00	\$30.00	LF		\$6,000.00
Site Electrical/Parking Lot Lighting/Phone Cabling	1.00	\$25,000.00	LS		\$25,000.00
Clean-up/ Fence Removal	1.00	\$8,000.00	LS		\$8,000.00
Clearing: Chipping/Spreading - entry drive/parking area	2.00	\$6,000.00	AC		\$12,000.00
Earthwork - Drive/Shelter/Play Area/Path	18000.00	\$3.00	CY		\$54,000.00
Tree Protection - fencing save critical areas	2000.00	\$1.25	LF		\$2,500.00

Little Mulberry Park Master Plan - Miller Tract					PAGE 4
Description	Quantity	Unit Price	Phase I	Phase II	
Large Group Shelter with Sitework/Hardscape/Landscape (continuation)					
Temporary/Permanent Grassing	10.00	\$3,500.00 AC			\$35,000.00
Landscape Planting	1.00	\$16,000.00 LS			\$16,000.00
Storm Piping - ROW Culvert System	800.00	\$40.00 LF			\$32,000.00
Storm Piping -Roof Drains/Headwalls/Inlets	1.00	\$20,000.00 LS			\$20,000.00
Low Dry Weirs w/ Stone Checkwalls Phase I - Water Quality	100.00	\$200.00 LF			\$20,000.00
Erosion Control - all measures Phase I	10.00	\$3,000.00 AC			\$30,000.00
Trash Receptacles - Recycled Post to Accept Owner Furnished Cans	6.00	\$350.00 EA			\$2,100.00
Rustic Park Entry Gate	1.00	\$3,000.00 EA			\$3,000.00
Park Entry Sign Pylon	1.00	\$7,800.00 EA			\$7,800.00
Vehicular/Rules/Directional Signage	1.00	\$6,000.00 LS			\$6,000.00
Site Security					
Remote Security Cameras @ Each Park Entry (3)	1.00	\$30,000.00 LS			\$30,000.00
Construction Sub-total				\$1,586,852	\$4,157,950
Contingency (Includes 30,000 Cubic Yards Phase 2 Siltation Removal/Spread Onsite)				\$50,148	\$1,110,000
Subtotal of Construction Items				\$1,637,000	\$5,267,950
Architectural/Engineering/Landscape/Signage Design Fees				\$130,000	\$316,077
Supplementary Topographical (and Lake Bed Survey Phase 1 & 2)				\$35,000	\$25,000
Owner Purchased Furnishings (Picnic Tables, Waste Cans, Benches, limited Equip't)				\$80,000	\$40,000
Testing, Utility Locate				\$18,000	\$14,000
Sub-total All Construction				\$1,900,000	\$5,663,027

Design Fees estimate above includes only those elements listed in the same Phase category

Appendix B: Steering Committee Letter to Recreation Authority

The primary recommendation of this committee is, Little Mulberry Park should be designed and developed for passive recreation only.

The elected officials of Gwinnett County have an opportunity to save and preserve a piece of land that is a rare find in such a densely developed county. This property has the potential to offer our residents recreational experiences and opportunities that can only be found in north Georgia. Unique qualities of this property include: headwater springs, rocky creeks, table rock waterfalls, quality wetlands, steep forested hillsides with endemic wildflowers, rare ridgeline panoramic vistas and historic Native American sites. Because of the uniqueness and natural beauty of this site the former owners offered this property for sale to the county with the stipulation that a large portion of the property be set-aside as a natural area. The elected officials of Gwinnett County have the ability to take this request one step further and protect the entire tract of land. This committee strongly agrees that development of active recreation anywhere on this site would severely impact and limit the natural experiences the former owners intended for the people of this county to enjoy.

Future development of active recreation in the reserved area would be a dilution of the intent of the park. Because of the elevation and location of the reserved area the light pollution, sound pollution, and visual intrusion would impact the enjoyment of the other 400+ acres. In addition, the steepness of the land, which is part of the unique character of the entire site, would be very expensive to develop. The majority of the area reserved for possible future active recreation has a 12+% side slope. Development of land this steep would easily cost close to \$750,000 to \$1,000,000 more than a similar site with a 2 to 5% side slope.

In conclusion, we propose that any future active recreation (ball fields and sports complexes) be developed off site near any of the several new schools that will be built near this park. By placing facilities for baseball or soccer in closer proximity to the regular users and by preserving the natural integrity of this park, we can go a long way towards educating the public on the values of keeping a natural area virtually untouched. This park has the potential to be a gem among the Gwinnett County park system: let us all work towards this common goal.

Appendix C: Area Wildlife List prepared by Marty Finck & Family

Mammals:

Opossum	Muskrat	Skunk
Beaver	Bat	Otter
Mole	Mice	Weasel
Rat	Grey Squirrel	Red Fox
Flying Squirrel	Chipmunk	Grey Fox
Rabbit	Raccoon	Coyote
Bobcat	Whitetail Deer	

Note: We have seen evidence of a very large cat on more than one occasion.

Birds:

Great Blue Heron	Egret	Loon
Geese	Duck	Coot
Killdeer	Vulture	Turkey
Red-tailed Hawk	Osprey	Sparrow
Quail	Mourning Dove	Barn Swallow
Belted Kingfisher	Owl	Brown Thrasher
Whip-poor-will	Chimney Swift	Blue Jay
Northern Mockingbird	Downy Woodpecker	Red-bellied Woodpecker
Crows	Tufted Titmouse	Black-capped Chickadee
Nuthatch	Wren	Robin
Eastern Bluebird	Meadow Lark	Red-winged Blackbird
Cardinal	Brown-headed Cowbird	Hummingbird
Indigo Bunting	American Gold Finch	Finch
Dark-eyed Junco		

Also: Bird resembling a Sandpiper, Snipe, or a Woodcock

Reptiles:

Snapping Turtle	Eastern Box Turtle	Slider
Soft-shell Turtle	Other Turtle	Gecko
Eastern Fence Lizard	Skink	Racer
Red-bellied Snake	Rat Snake	King Snake
Water Snake	Garter Snake	Copperhead
Rattlesnake		

Amphibians:

Salamander	Newt	Toad
Tree Frog	Bull Frog	Other Frogs
Waterdog		

Fish:

Largemouth Bass	Bluegill Sunfish	Red-breasted Sunfish
Grass Carp	Catfish	Crappie
Pike		