Section C

Conservation Values of the Protected Property

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1. Field Survey Methods

Field Assessment Personnel
The Field Assessment Team for the Laurel Mountain Preserve baseline documentation included:

David Tuch - Landscape Architect & Environmental Planner
Lindsay Majer - Environmental Planning Assistant
Kevin Caldwell – Conservation Biologist

Field Assessment Methods
Prior to the on-site inventory, Equinox obtained and utilized aerial photographs of the area, the Moffitt Hill Quadrangle USGS Topographic map, a Conservation Plan provided by Land Design, Inc. of Asheville, NC, as well as Buncombe and McDowell County parcel information. This information was used to determine property boundaries and general topography as well as forecasting probable plant cover, rare and uncommon plant communities, and the location of water resources.

The Field Assessment Team spent a total of two days in the field on the Laurel Mountain Preserve. On June 2nd, 2005, the Field Assessment Team was accompanied by Reggie Hall and Bonnie Millar of the Carolina Mountain Land Conservancy and Alex Nadel, the daughter of the landowner. The Field Assessment Team split into two groups, one group documenting the conservation values of the property, and the other group performing a botanical inventory. The Conservation Values group began the field assessment at the southern tip of the property and walked the trail parallel to Bird Creek. Once the northern boundary was reached, they walked west along the northern boundary of the property just north of the Old Cabin Trail. Once the top of the knoll was reached, they turned around and headed east and then southeast into the eastern portion of the property. From here, the Conservation Values group drove to the southwestern portion of the property along a gravel road. They walked several hundred feet into the southern portion of the property along a trail parallel to an unnamed stream.

On June 2nd, 2005, the Botanical Inventory group began in the northwestern corner of the property and worked southeast toward the center of the property. On July 8th, 2005, Kevin Caldwell was accompanied by Peg Nadel and they began in the central portion of the property near the circular road and walked east into the Bird Creek drainage area. They then proceeded south along the trail to the main road.

Data Recording Methods
A Global Positioning System (GPS) was used to mark waypoints (or latitude/longitude coordinates) at various locations throughout the property including property boundaries, roads, water features, and significant natural features. The waypoints and coordinates recorded in this Baseline Documentation provide standard and consistent locations from which to monitor a conservation easement overtime. It should be noted, however, that during the field assessment, satellite

coverage and reception was poor throughout the property due to the nature of the terrain and cloudy, rainy weather. This may cause recorded waypoints to be within 30-60 feet of their actual location. A Waypoint Map illustrates the location of the waypoints and corresponds to the Photographic Descriptions of the Property in Section D of the report. A monitor can use a GPS unit or track latitude and longitude coordinates manually to find the specific locations identified. At each waypoint, the areas described and documented with a photograph should remain the same over time, or if changed, changes through a natural evolutionary process. Human induced changes or alterations in the current status of an area, as described at each waypoint or coordinate, could be a violation of the conservation easement terms. Those observations of neighboring properties are meant for reference only. Neighboring properties are not restricted by the terms of the easements but future activities from the neighboring lands could infringe upon the status of the conservation values protected by the easement and should also be accounted for over time.

Botanical and other biological information was recorded throughout the property within a meandering-survey pattern. Species were recorded until no additional species were observed. Possible rare or unknown plant species were collected, if numbers permitted, for later identification after being pressed, labeled and dried. Natural communities were initially mapped in the field by hand and later mapped using GIS. Birds were noted by sight and song where observed and wildlife was recorded by sight and sign.

Each waypoint or coordinate contains certain descriptive criteria. This information provides the reader and monitor clues on what to look for when attempting to envision the area at the waypoint or when comparing future observations. These criteria are labeled in bold. Each waypoint is identified by decimal degrees. A physical **Location** is described which can aid monitor orientation when coordinates may prove difficult to find. **Land Cover** will also be described. **Photographs** are taken at waypoints to provide visual documentation of conditions as of July 8th, 2005.

2. Observations from Fieldwork

The Laurel Mountain Preserve contains significant conservation values including abundant water resources, rare plant and animal species, old growth forest, forest interior breeding bird species, and wildlife habitat. The features that contribute to the significance of the property are listed below.

Water Resources

The conservation area lies within the Catawba River watershed and contains much of the headwaters of Bird Creek, a NCDWQ classified Trout Waters (Tr). Bird Creek feeds Crooked Creek to the north before flowing into the Catawba River, and then Lake James east of Marion. Approximately 4.5 miles of streams are found on the Preserve. Because the entire property rests on north-facing slopes of Cross Mountain and Round Mountain, containing relatively tight coves, water is abundant and perennial streams are numerous.

High Priority Conservation Areas

High Priority Conservation Areas on the Preserve include perennial streams (wetlands), old growth Mesic Oak forests, and both Rich and Acidic Cove Forests. Three types of natural areas were determined to have high conservation value due to the presence of wetlands, rare species, rare species habitat, high integrity or quality, and species diversity. They are delineated on the Natural Communities Map (Section C). Regional conservation efforts are substantially augmented by the permanent protection of these areas via conservation easements. In total, High Priority Conservation Areas cover 78 acres or 38% of the project area in addition to 4.5 linear miles of stream.

- *Streams* - Though streams are not formally ranked by NCNHP, these wetland resources are exceptional natural communities protected within the Laurel Mountain Preserve. Streams are a critical resource supplying fresh water to the Catawba River watershed as well as supporting aquatic wildlife.

- *Old Growth Forest* - Approximately 37 acres of what appears to be historically unlogged, old growth forest including portions of most forest types are found onsite. Such areas are typically the steepest and inaccessible slopes. Old growth forests are the rarest forested conditions found in the eastern United States today offering an atypical glimpse of forest conditions prior to European colonization and deforestation. Formerly dominant, they are now rare following waves of settlement, clearing for farming, charcoaling, and grazing, mechanized forestry, and recent urbanization and fragmentation. Such areas remain today mostly by lack of access due to steepness and rock, and un-marketable timber within such areas compared with less steep areas.

  Old growth was delineated on the Preserve based on characteristics that indicate un-logged, undisturbed forests. Because different forest communities vary in their structural characteristics as canopy height and cover, maximum tree diameters, species alliances, moisture, soils and bedrock, disturbance regimes and dynamics, no single definition of old growth can be applied to all

forests. Still, many standard characteristics of old growth forests can be applied to most forested areas in the eastern United States.

Features used to delineate old growth on this tract tend to be used across the board for eastern forests including:

1. Uneven-aged stand composition
2. Presence of very large diameter trees per species
3. Well developed and "sculpted" crowns
4. Un-compacted soils, "pit-mound" topography, and natural disturbance regimes
5. Natural tree-fall openings, downed woody debris and standing dead trees
6. Location on very steep, inaccessible slopes bypassed for more easily accessible and marketable trees
7. Lack of roads, skid trails, and stumps

Forested areas designated in this report as "old growth" have all of these features, although tree-cores were not taken to measure diameters. The abrupt termination of old logging roads in cove basins around these steep areas strongly suggests that slopes in Mesic Oak Forests were too steep, erodable, and too dangerous to access profitably in the past.

- *Rich Cove, Acidic Cove, and Slope Forests* – These forest communities are High Priority Conservation Areas because they contain the highest numbers of rare species and total species diversity and density of forests onsite. They also serve as major browsing zones for mammals. Regionally, Rich Cove forests are not typical, though globally they are more common. Rich Coves have the best growth conditions for a wide array of marketable timber species and are thus preferred and sought heavily in local and regional timber operations.

  Due to the Hemlock Wood Adelgid, Acidic Cove forests are now losing their keystone species, the Eastern Hemlock, throughout the southern Appalachians making this a very sensitive community. Though not a sought-after timber species, hemlock is often removed to increase growth of other marketable species or cleared for development. This forest type is limited to riparian conditions in the southeastern area of the property.

Critical Plant Species

The following rare plant and wildlife species have been designated and tracked by the NCNHP as critical biological elements to the state of North Carolina. Their presence on the Laurel Mountain Preserve illustrates the conservation value of this area.

- *Rare Plant Species* - A total of 14 Rare List, and Watch List vascular plant species tracked by NCNHP were observed on the Preserve. Though common on the Preserve, **Broadleaf Coreopsis** is described as "Significantly Rare" meaning those species "which are rare in North Carolina, generally with 1-100 populations in the state, generally substantially reduced in numbers by habitat

destruction...direct exploitation or disease." All species are listed in Table 1 below.

Table 1: Rare and Watch List Plant Species of the Laurel Mountain Preserve
July 2005. Highlighted species have fewer than 100 populations in the State.

Species	Common Name	Status NC	Status US	Rank NC	Rank US
Rare List					
[redacted]	[redacted]	[redacted]		[redacted]	
Watch List					
[redacted]	[redacted]	[redacted]		[redacted]	
Panax quinquefolius	American Ginseng	W5B	SC	S4	G4
[redacted]	[redacted]	[redacted]		[redacted]	
Watch List, "Exploitable"					
Actaea cimicifuga	Black Cohosh	W5B	-	S4	G4
Aletris farinosa	Colic-root	W5B	-	S5	G5
Chamaelirium luteum	Devil's Bit	W5B	-	S5	G5
Galax urceolata	Galax	W5B	-	S5	G5
Sanguinaria canadensis	Bloodroot	W5B	-	S5	G5
[redacted]	[redacted]	[redacted]		[redacted]	
Trillium erectum	Wake-robin Trillium	W5B	-	S4	G4
Trillium grandiflorum	Largeflower Trillium	W5B	-	S4	G4
Trillium undulatum	Painted Trillium	W5B	-	S4	G5

Critical Wildlife Species

One species, the **Yellow-bellied Sapsucker,** tracked by the NCNHP, was observed by sign on the Laurel Mountain Preserve. Drill-holes of the Yellow-bellied Sapsucker were observed occasionally on Tulip Poplar, Eastern Hemlock, and Pitch Pines throughout the property. Though this species utilizes the property for feeding, NCNHP tracks only breeding populations, and breeding was not confirmed. Spring 2006 breeding bird inventories could verify presence of this species.

Out of the 39 probable-breeding birds observed onsite, 17 are listed by Partners in Flight (PIF) as priority conservation species within the Southern Blue Ridge Region (Table 2). Scores for all birds are listed in "Wildlife Existing on the Property" (See Section H, Attachments). *Partners In Flight (PIF) is a partnership of federal and state agencies, industry, non-governmental organizations, and many others, with the goal of conserving North American birds.*

Species of conservation value in the PIF assessment are listed in Table 2. These species benefit from the forest-interior habitats defining the Preserve and likely breed on the property.

Table 2: PIF Conservation Priority Species of the Laurel Mountain Preserve
July, 2005.

Tier I	Tier IIA and IIB	Tier III
Acadian Flycatcher	Black-and-white Warbler	Carolina Chickadee
Hooded Warbler	Black-throated Green Warbler	Indigo Bunting
Louisiana Waterthrush	Downy Woodpecker	Pileated Woodpecker
Scarlet Tanager	Eastern Towhee	
Wood Thrush	Eastern Wood-Pewee	
Worm-eating Warbler	Ovenbird	
Yellow-throated Vireo	Northern Parula	

Their designations are:

- *"Tier I" species (High Overall Priority)* – (7 species) - Species of concern throughout their range, showing high vulnerability due to numerous factors.

- *"Tier IIA / Tier IIB" species (High Regional Priority)* – (7 Species) - Species that: (IIA) are declining in the core of their range and require short term action to reverse or stabilize decline and (IIB) species for which this region shares responsibility for long-term conservation even if the species is not currently declining.

- *"Tier III" species (Watch List) – (3 Species) – Species on the US Watch List warranting conservation attention where they occur, of moderate overall priority, stable or increasing populations in a given region.*

Property wide, 23 of 38 birds observed are forest-interior dependent breeding species demonstrating the importance of protecting mature interior forest and un-fragmented conditions. Future field visits during the spring season would likely produce more PIF priority bird species.

Potential Rare Species Habitat

Suitable habitat exists onsite for an additional 45 Rare List (Watch List excluded) plant and animal species which are known to occur in the same natural communities and habitats in Buncombe and McDowell counties but which were not observed on the Preserve (See Section H, Rare Plants Potentially Occurring on the Property and Rare Animals Potentially Occurring on the Property). Such species could colonize the Preserve in the future or be observed in additional field work. Species most likely to be found are **Mountain Heartleaf**, which has been found upslope to the southeast near Round Mountain.

NCNHP Rare Plant and Wildlife occurrence records for Buncombe and McDowell Counties were reviewed to determine the possibility of occurrence in the study area based on the presence of potential habitats known from the Preserve (See Section H, Plant Status and Rank). The assessment compares records from the two counties with the presence and integrity of suitable habitats onsite, eliminating those species whose habitats do not occur on the Preserve. State and Federal rarity ranks and codes are excluded from the table.

Forest Interior and Riparian Wildlife Habitat

Un-fragmented, contiguous forest-interior conditions are the defining and probably most important feature of the Preserve in light of rapid development and forest fragmentation in the Southern Appalachian region. The Preserve may first and foremost be considered a refuge for forest-interior birds and forest-dependent wildlife. The presence of numerous forest interior birds throughout the Preserve in combination with the absence of edge, yard, opportunistic, aggressive birds such as Starlings, Grackles, Cowbirds, and Blue Jays indicates that the Preserve offers excellent and critical habitat for migratory songbirds.

Within this forested matrix, a variety of topography is found including all directional aspects, gentle to exceptionally steep slopes, and very dense to wide-open understory conditions. The embedded riparian areas with occasional small falls and slides provides extensive habitat for salamanders, arthropods, birds, reptiles, and natural forage, cover, and movement corridors for many mammals.

Cove forests provide an exceptional variety of browse for wildlife including saplings of trees, shrubs and vines, herbs, ferns, and monocots that provide fresh growth, nectar, leaves, flower, fruits, and seeds throughout the growing season. Cover for forest interior species is dense in Mesic and Sub-mesic Oak and Acidic Cove forests throughout the tract. Additionally, a wide variety of oak and hickory species will provide nut-mast for bear and deer throughout the Property. Larger White Oak trees onsite provide seasonal roosting sites for bats beneath large plates in tree crowns.

Lack of sizeable rock outcrops, cliffs, bluffs, and talus areas may preclude denning areas for bobcats and black bear, however, large areas of excessively steep oak-forest with extensive Rhododendron cover that could not be fully inspected may harbor some potential denning areas. Large hollow Red Oak and Chestnut Oak trees in old growth areas possibly provide some denning habitat for bears as well. Although classified as Trout Waters (Tr) by the NCDWQ, Brook trout are probably absent due to very shallow and possibly warmer stream conditions. In addition, most Brook trout populations are concentrated above 3,000 feet elevation in the mountains. Fish inventories on Bird Creek would likely reveal several small fish species.

Plant and Wildlife Species Diversity

- *Inventoried Plant Species* - A total of 226 plant species were observed including 50 woody and 176 vines and forbs (See Section H, List of Plants Found on the Property). Non-vascular plant species (mosses, lichens, and liverworts) were not inventoried. Comprehensive plant species inventories were conducted on June 2nd and July 8th, 2005. All plant species observed were recorded and noted by their community of occurrence. Some early spring-blooming species might not have been visible during inventories.

- *Inventoried Wildlife Species* - A minimum of 59 wildlife species including 5 amphibians, 39 songbirds, 7 butterflies (or larvae), 6 mammals, and 2 reptiles were identified incidentally during botanical inventories on the Preserve. A preliminary listing of wildlife observed directly, or by song, sound, scat, or

other sign is found in "List of Wildlife Found on the Property" (See Section H, Attachments). Additional wildlife inventories would easily yield a much larger list of wildlife, especially amphibians, mammals, insects, and fish, and potentially a few additional rare species.

- *Invasive-Exotic Plants and Wildlife* - Six invasive exotic plants and one invasive insect were found primarily on roads and road shoulders in the Preserve. Other non-invasive plants are noted in the "List of Plants Found on the Property" (See Section H, Attachments). These invasive plants are generally restricted to and most abundant on and bordering abandoned logging roads where soils were originally graded or roads and ensuing water-flows that may expose soils, most notably near Waypoint 7 on the central south-facing slope east of Bird Creek (See Section D, Photographic Record of the Protected Property). They are found to some degree on steep forest slopes along roads east of Bird Creek. Except for Japanese Stiltgrass, most individuals and species can be controlled onsite with annual efforts concentrated over 2-3 days.

Table 3: Invasive Exotic Plants Found on the Property

Scientific Name	Common Name
Plants:	
Ailanthus altissima	Tree of Heaven
Lonicera japonica	Japanese Honeysuckle
Microstegium viminium	Japanese Stiltgrass
Miscanthus sinensis	Chinese Silvergrass
Paulownia tomentosa	Princess Tree
Rosa Multiflora	Multiflora Rose

The **Hemlock Woolly Adelgid** (*Adelges tsugae*) was found during the field survey. Its capacity to alter and/or destroy the Eastern Hemlock component of the forest is tremendous, with the resulting effects on the associated shaded forest ecosystem likely to be profound.

Characteristic Natural Communities

Forests are the dominant cover of the easement area which is characterized by mid-successional (previously logged) but maturing forest surrounding areas of apparently unlogged, old-growth Mesic Oak forest. Early or young successional forests do not occur onsite. Surficial cover is approximately 98-99% rooted vegetation and soils while 1-2% surface area consists of streams and old logging roads. Much of the tract was selectively logged or high-graded approximately 40-60 years ago, influencing the current forest structure, species composition, and terrestrial surface of the Laurel Mountain Preserve. Prominent American Chestnut and other stumps, absence of young even-age stands, and presence of remnant large trees in steep areas indicate that culling and removal of other major timber species probably occurred selectively over time.

Exposure is dominantly northern, but exposures in all directions occur within the general northern aspect. Underlying geology includes the Henderson Gneiss formation which consists of metamorphosed granodiorite, a type of granite. The soils are largely acidic in the western and central regions with one small pocket of basic or neutral soils in coves, whereas the eastern property region soils are largely neutral to circum-neutral indicated by the dominance of Rich Cove forests and lush herb cover. Soils are dominantly mesic except on ridgelines, knolls, and south-facing slopes.

Natural communities described below follow community type descriptions in ***The Natural Communities of North Carolina, Third Approximation*** (Schafele and Weakley, 1990). NCNHP tracks and ranks community types according to these descriptions. More technical community type classifications for these described areas can be found in ***The Terrestrial Vegetation of the Southeastern US*** (Shafele, et al, 1999). These descriptors are excluded due to their lack of clarity for the layperson, and because NCNHP does not yet track natural communities by these descriptors.

- *Rich Cove and Slope Forest* - Species richness, diversity, and cover is highest within this forest type compared to others onsite because of factors such as constant moisture and higher pH soils and bedrock.

  Composition: **Canopy trees** include Tuliptree which dominates with scattered Basswood, Bitternut Hickory, Silverbell, Northern Red Oak, and White Ash. **Understory trees** include the above listed trees and Yellow Buckeye and Sweet Birch. **Shrubs** include Sweet-shrub, Wild Hydrangea, Alternate-leaf dogwood, and Great Rhododendron. **Wildflowers and ferns** dominate and define this forest type. Typical species are Broadleaf Coreopsis, Wood Nettle, Canada Violet, Largeflower Trillium, Wakerobin Trillium, Toadshade Trillium, Spiderwort, Foamflower, Black Cohosh, Blue Cohosh, Stone-root, Bunchflower, Sweet Cicily, Seep Rue, Solomon's Seal, Bloodroot, Mayapple, Jack in the Pulpit, Spikenard, Jewel-weed, Native Astilbe, Turks Cap Lily, Curtis' Goldenrod, Zig-zag goldenrod, Sweet Cicely, Maidenhair Fern, Christmas Fern, Fragile Fern, Cinnamon Fern, Interupted Fern, Silvery Glade Fern, and Lady Fern.

  Rare Species: **Yellow-bellied Sapsucker's** drill in Tulip Poplar was observed throughout this community type**.** Rare plants include **Broadleaf Coreopsis.** Watch List species are **American Ginseng, Bloodroot, Black Cohosh, Colic-root, Devil's Bit, Large-flower Trillium, Wake-robin Trillium, and Toadshade Trillium.**

- *Acidic Cove and Slope Forest* - Unlike Rich Cove forests, Acidic Cove and Slope Forests are dominated by acid-tending species and are often dense with Great Rhododendron thickets and cover. However, where openings are found, many herbs and other species common in Rich Cove and Slope Forests are found. They are almost always associated with riparian areas. It should be noted that the hemlock woody adelgid (*Tsugae adelges)* was observed on Eastern Hemlocks, one of the defining trees of this forest type. To date, adelgid infestation is untreatable in forest conditions, so should the hemlock

die out here in the future, this area would likely be classified as a Mesic Oak Forest (see description below).

Composition: **Canopy and understory trees** include Eastern Hemlock with associated Black Birch, Tulip Poplar, White Pine, and an occasional Basswood, American Beech and Silverbell. Several 3-3.5 ft. diameter hemlocks are found in the southern portion of this forest type. **Shrubs** are almost exclusively Great Rhododendron with occasional Wild Hydrangea and Sweetshrub. Herbs are nearly absent in this forest type but small openings include Round-leaf violet, Northern White Violet, Wood Nettle, Painted Trillium, Spikenard, Seep-rue, Indian Cucumber, Bluets, Seep Sedge, Partridge-berry. (See Rich Cove forest description for herbs found in openings).

Rare Species: **Yellow-bellied Sapsucker** drillings in Eastern Hemlock and Tulip Poplar were observed in this community type**. Broadleaf Coreopsis, Black Cohosh, Wake-robin Trillium,** and **Bloodroot** were observed in herbaceous openings.

- *Mesic Oak Forest* - This very moist forest type characterizes the steepest northern-aspect slopes on the property and appears to remain largely uncut. Numerous American Chestnut boles were observed throughout this forest type indicating it was formerly a canopy tree but was not culled due to steepness. Structure of this forest type is similar to Acidic Cove and Slope Forest with heavy understory of Great Rhododendron, but inclusion of Chestnut Oak and exclusion of Eastern Hemlock. Herbs may be moderate in areas where Great Rhododendron is absent.

  Composition: **Canopy Trees** are dominated by Northern Red Oak and Chestnut Oak with scattered Red Maple, Locust, Tulip Poplar, Scarlet Oak, and White Oak. **Understory trees** are Black Gum, Silverbell, Fraser Magnolia, and Sourwood. **Shrubs** include Witch Hazel, Deerberry, Black Alder and Horse Sugar. **Wildflowers and ferns** are not dominant but some areas of dense New York and Hayscent fern are found in less steep coves. Other species include Wild Yam, Beech Fern, Xmas Fern, Milksick, Jack in the Pulpit, and Foamflower. Most locations of this forest type appear to be historically unlogged except for possible cutting from the edges of these steep slopes. An old-growth condition is suggested by the exceptional steepness and lack of access to the sites, lack of marketable timber, and occasional large diameter oaks and other species with well developed, sculpted crowns that tend to form only after very long periods of time. Additionally, numerous logging road spurs end at cove centers and slopes bases rather than continuing into the slopes of these areas suggesting that some perimeter trees may have been cut, but that the area at large was not accessed. Tree cores would reveal the age of these areas for certain.

  Rare Species: **Galax** occurs throughout this natural community.

- *Sub-mesic Oak Forest* - Conditions in this forest type are slightly less moist than in Mesic Oak Forests but not as dry as Chestnut Oak or Dry Oak forests

(described below). A greater variety of oaks share the canopy in this forest type, as well as more Mountain Laurel, and more open areas with wildflowers and ferns.

Composition: **Canopy trees** are a broad mix of White Oak, Scarlet Oak, Chestnut Oak, Black Oak with some Northern Red Oak, Red Maple, Locust, Mockernut Hickory, Pignut Hickory, and Black Gum. Understory trees include the above listed trees and Sourwood and Dogwood. **Shrubs** include Flame Azalea, Highbush Berry, Lowbush Berry, Mountain Laurel, Maple-leaf Viburnum, Round-leaf Greenbriar, Summer Grape. Wildlflowers include Galax, Squawroot, Appalachian Bellwort, Wild Yam, Whorled Loosestrife, Large Houstonia, Cow-wheat, Halberd-leaf violet, Striped Wintergreen, New York Fern, and Hayscent Fern.

Rare Species: **Yellow-bellied Sapsucker** drill-holes were observed on Pitch Pines on the unnamed knoll in the central southern portion of the Preserve. Plants include **Galax, Devil's Bit, Broadleaf Coreopsis,** and a single **Carolina Hemlock.**

- *Montane Oak-Hickory Forest* - Most of this forest type was high-graded or selectively logged, but does not appear to have been clear cut. The most intact, least disturbed area is located east of the small unnamed knoll in the central tract above the 5 acre private in-holding. Though not as rich in total species as the Rich Cove and Slope forests onsite, the number of tree and shrub species is highest of any area onsite. Herbs are typically not numerous or dense except where this forest type approaches coves and toe-slopes or soils are deeper and moister.

  Composition: Dominant **Canopy trees** are White Oak, Chestnut Oak, Scarlet Oak, Northern Red Oak, Pignut Hickory, Mockernut Hickory with scattered Tuliptree, Black Locust, and Black Gum. **Understory trees** include Fraser Magnolia, Silverbell, Dogwood, Sassafras, Sourwood, and Black Birch. **Shrubs** include Maple-leaf Viburnum, Hispid Greenbrier, Blackberry, Wild Hydrangea, Flame Azalea, Mountain Laurel, Hillside Blueberry, Highbush Blueberry, Buffalo Nut, Common Greenbriar, Summer Grape, Horse-sugar, Mountain Laurel, and Great Rhododendron. **Wildflowers and ferns** include Mountain Mint, Appalachian Bellflower, Squawroot, Whorled Loosestrife, Wild Licorice, Wild Yam, Indian Pipe, Appalachian Bellwort, Rattlesnake Orchid, Curtis' Goldenrod, Pale Indian Plantain, Autumn Bent Grass, Pennsylvania Sedge, Christmas Fern, Dissected Grape Fern, Beech Fern, Hayscent Fern, New York Fern, Intermediate Wood Fern.

  Rare Species: **Broadleaf Coreopsis, Biltmore Carrion-flower, Devils Bit, Colic Root,** and **Black Cohosh.**

- *Chestnut Oak Forest* - This very dry forest type is found on south-facing upper slopes, ridgelines, and knolls. Mountain Laurel tends to dominate the shrub zone but open areas are found. In openings, leaf-litter is more typical than heavy herb cover and though herbs are not absent they tend to be scattered.

Composition: **Canopy Trees** are Chestnut Oak with associated Scarlet Oak, Black Oak, and Black Gum. Pitch Pine is found on some ridgelines and a small knoll in the central southern portion of the Preserve. Understory trees include the above listed trees and Sourwood. **Shrubs and Wildflower zones** are nearly identical with those listed in Sub-mesic Oak forest listed above.

Rare Species: **Yellow-bellied Sapsucker** drill-holes were observed on Pitch Pines on the unnamed knoll in the central southern portion of the Preserve. Rare Plants include **Galax** and **Biltmore Carrionflower.**

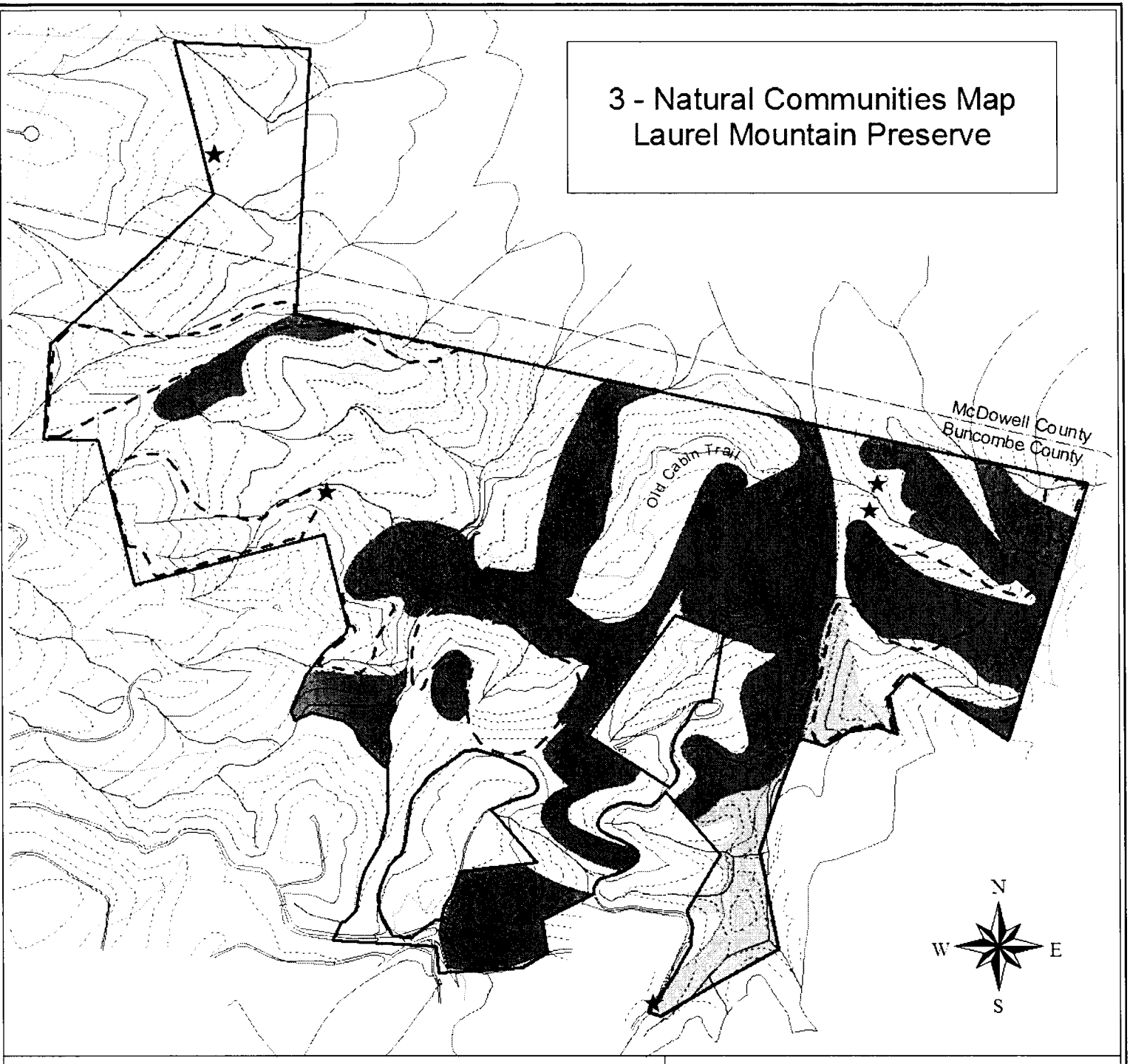
Proximity to Protected Lands

The Laurel Mountain Preserve is within close proximity to the Pisgah National Forest and Gamelands, although it does not directly abut. Hickorynut Gamelands and other private forested land surround the property, although this land is not necessarily protected from development. The connectivity of all forested land in the general vicinity of the property is profoundly important for plant and animal migration and diversity.

Viewshed

Views in the growing season are limited by dense canopy cover to short forest interior views along ridgelines and opposing slopes and ridges where tree-fall gaps are present. Winter views will be possible during leaf-off. The property is visible from State Roads 1100 and 1106 to the north, from south facing slopes in the road vicinity, and south-facing slopes, ridges, and peaks to the north from Edmundson Mountain and Wildcat Knob.

3 - Natural Communities Map
Laurel Mountain Preserve



Legend

- Property Boundary
- Adjacent Parcels
- Roads
- Trails
- County Line
- 200' Contours
- 40' Contours
- Streams
- Rare Plant Occurrences
- Old Growth Forest
- Rich Cove Forest
- Acidic Cove Forest
- Montane Oak Hickory Forest
- Chesnut Oak Forest
- Submesic Oak Forest
- Mesic Oak Forest

300 0 300 600 900 Feet

EQUINOX
ENVIRONMENTAL
CONSULTATION & DESIGN

Section D

Photographic Record of the Protected Property

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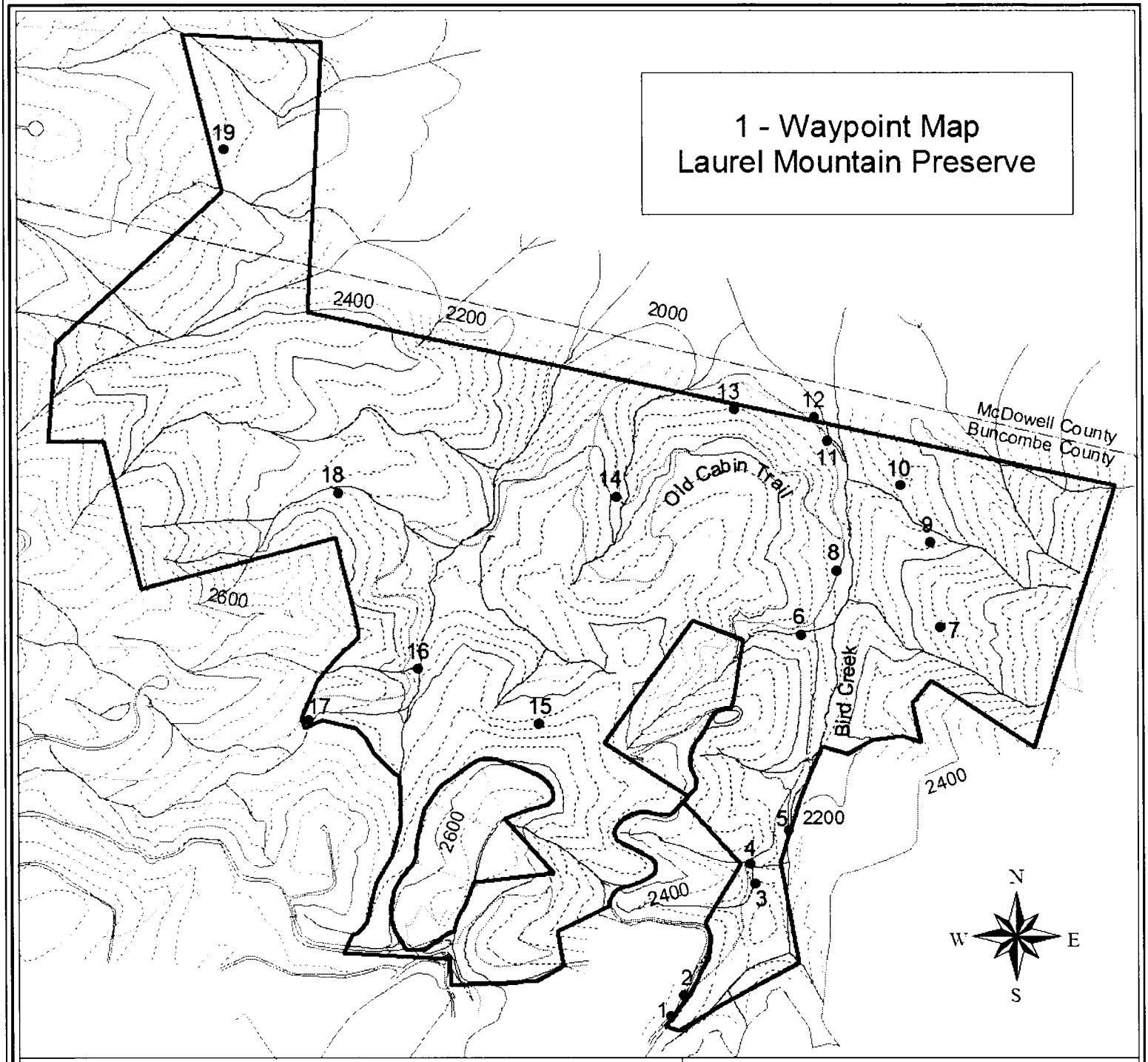
1. Waypoint Map
2. Observations by Waypoint or Coordinates



Legend

- Property Boundary
- Adjacent Parcels
- Roads
- Trails
- County Line
- 200' Contours
- 40' Contours
- Streams
- Waypoints

300 0 300 600 900 Feet

EQUINOX
ENVIRONMENTAL
CONSULTATION & DESIGN

Waypoint 1: Lat./Long. 35.54606466, -82.22768490
Location: Road west of upper Bird Creek
Land Cover: Dirt Road/Acidic Cove Forest

Photograph: #1– Photo of White-leaf Sunflower along unpaved road bordering upper Bird Creek.

Waypoint 2: Lat./Long. 35.54633439, -82.22747871
Location: Road west of upper Bird Creek
Land Cover: Dirt Road/Acidic Cove Forest

Photograph: #2– View 210° of typical conditions of unpaved road.

Waypoint 3:
Lat./Long.
35.54779108,
-82.22636919
Location: South-eastern boundary and Bird Creek drainage
Land Cover: Acidic Cove Forest

Photograph: #3a- View looking 160° of typical Acidic Cove forest conditions.

Photograph: #3b- View looking 110° of cascades in upper Bird Creek Drainage.

Waypoint 4: Lat./Long. 35.54805100, -82.22644874
Location: Eastern boundary, Bird Creek Drainage
Land Cover: Acidic Cove Forest

Photograph: #4a- View looking 305° looking up drainage at property boundary.

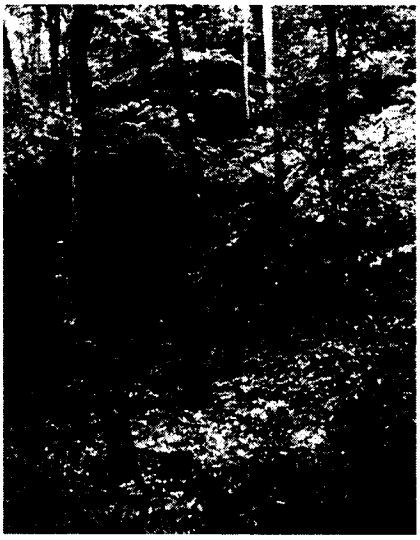
Photograph: #4b– View looking 50° down old logging road and seep area parallel to Bird Creek.

Waypoint 5:
Lat./Long.
35.54849088,
-82.22584256
Location:
Northeastern Preserve area
Land Cover: Acidic Cove Forest, Mountain Laurel thicket

Photograph: #5a- View looking 195° upstream of cascades on Bird Creek.

Photograph: #5b- View looking 30° downstream on Bird Creek.

Waypoint 6: Lat./Long. 35.55102364, -82.22567442
Location: Central Bird Creek
Land Cover: Rich Cove Forest



Photograph: #6a– view 195°of lush Rich Cove understory east of Bird Creek and old road.

Photograph: #6b– view 95° of lush Rich Cove understory across Bird Creek.

Waypoint 7: Lat./Long. 35.55114627, -82.22346612
Location: East of Bird Creek.
Land Cover: Montane Oak Hickory Forest

Photograph: #7a– View 320° of rock exposed by old log road.

Photograph: #7b– View 50° upslope by rock outcrop.

Waypoint 8: Lat./Long. 35.55186510, -82.22512373
Location: Lower Bird Creek south of Old Cabin Trail
Land Cover: Rich Cove Forest

Photograph: #8a- View 50° into stream corridor.

Photograph: #8b- View 250° looking upslope in cove forest.

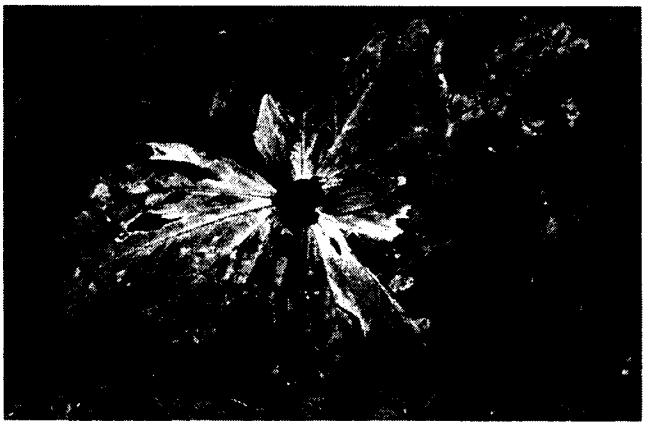
Photograph: #8c– View looking 115° downslope of cascade on Bird Creek south of Old Cabin Trail.

Waypoint 9: Lat./Long. 35.55224597, -82.22364315
Location: Northeastern easement region, unnamed stream
Land Cover: Mesic Oak Forest

Photograph: #9a– View looking 120° upstream into cove.

Photograph: #9b– View looking 320° downstream into cove.

Waypoint 10: Lat./Long. 35.55298333, -82.22412989
Location: Northeastern Preserve
Land Cover: Mesic Oak Forest



Photograph: #10– Photo of the only Toadshade Trillium (NC Watch List) seen on the Preserve.

Waypoint 11: Lat./Long. 35.55354240, -82.22529589
Location: Bird Creek, south of boundary
Land Cover: Forest / stream

Photograph: #11 - View looking 170° of stream cascades.

Waypoint 12: Lat./Long. 35.55385530, -82.22549387
Location: Along northeastern boundary
Land Cover: Rich Cove Forest

Photograph: #12a- View looking 290° along property boundary.

Photograph: #12b- View looking 150° along road at boundary.

Photograph: #12c– View from adjacent property looking 165° toward Preserve of old fire-pit and campsite along Bird Creek.

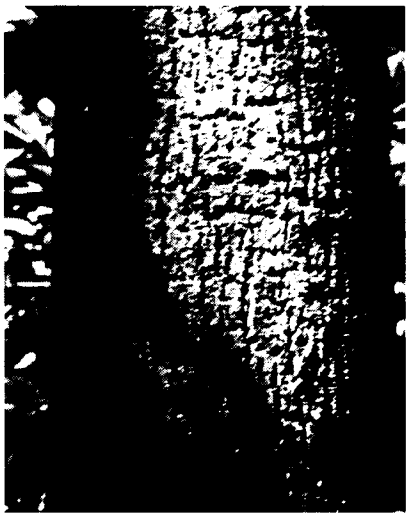
Photograph: #12d- View from adjacent property looking 165° upstream by fire pit.

Waypoint 13: Lat./Long. 35.55394113, -82.22677060
Location: North / central property boundary
Land Cover: Mesic Oak Forest

Photograph: #13a- View looking 100° along northern property boundary.

Photograph: #13b- View looking 300° down boundary with flagging.

Waypoint 14: Lat./Long. 35.55278510, -82.22863558
Location: North / central property boundary
Land Cover: Rich Cove Forest



Photograph: #14- View looking 220° at yellow-bellied sapsucker drill-holes on Tuliptree bark.

Waypoint 15: Lat./Long. 35.54982654, -82.22981852
Location: Central / south area, below circular drive
Land Cover: Mesic Oak Forest

Photograph: #15– View of Peg Nadel by 3 ½ ft. diameter chestnut oak tree in probable old growth area.

Waypoint 16: Lat./Long. 35.55052936, -82.23175415
Location: Western Preserve area
Land Cover: Mesic Oak Forest/Stream

Photograph: #16a- View looking 150° at waterfall.

Photograph: #16b- View looking 180° of waterfall.