DRAFT REPORT

2000

ENVIRONMENTAL ANALYSIS OF CANTON'S 1-MILE EXTRATERRITORIAL JURISDICTION (ETJ) EXTENSION ALONG US 19 & 23 EAST, AND THE NORTH HOMINY CREEK CORRIDOR (NHCC) TO THE HAYWOOD-BUNCOMBE COUNTY LINE

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PREFACE

THE CORRIDOR

Environmental evaluation of the North Hominy Creek Corridor resources has been an exciting experience of going back in time. Back in time millions and millions of years ago, when western North Carolina was being formed by powerful geological forces. These forces created an environment that provided an evolution of the most diversified flora and fauna on the North American continent.

Between 8,000 and10,000 years ago the first humans moved into the area. These prehistoric hunter gatherers found that this wilderness paradise met all their physical and spiritual needs.

The children of these ancient ones met our European ancestors, when they traveled through the Corridor, coming from the French Broad River valley into the Pigeon River valley. The Cherokee land on both sides of the Corridor became the Promised Land for the white man, and he fought a war to control it and the Cherokee.

Later the Corridor became the transportation conduit for the settlement, growth and development of interior western North Carolina. Today, it is the major transportation link for travelers, tourists, commuters and commerce. Over the past 200 years outstanding natural and historic heritages have developed in the area, as well as loss of these attributes through over exploitation or neglect of unique human and natural resources. Lack of stewardship has prevailed.

The present generation is conscious of this past mistreatment of the environment. It wants to protect its heritages and quality of life for future generations through sustainable management. As the following report reveals it will take talent, commitment and creative management to achieve this noble goal.

INTRODUCTION

The Town of Canton has extended its ETJ powers 1-mile eastward along highway 19 & 23 into the NHCC. The Southern Railway tract marks the north boundary of the extension, and North Hominy Creek forms its south boundary. A map of the 1-mile extension and the NHCC is shown in Figure 1. A description of the ETJ is given in Appendix I. For this report the term North Hominy Creek includes the main stem of the Hominy Creek and all its tributaries in Haywood County (Dutch Cove Creek, North Hominy Creek, etc.).

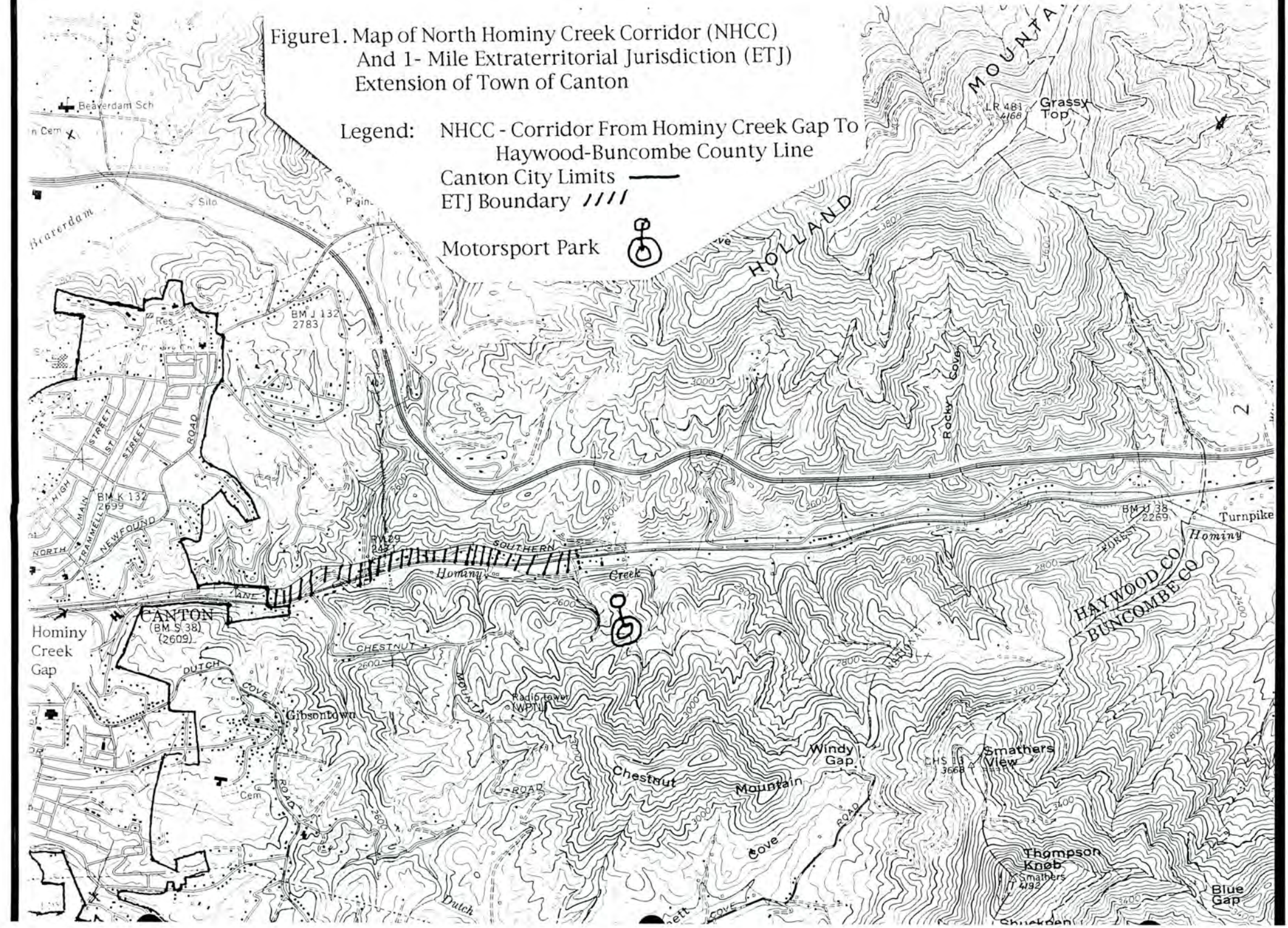
To assist future planning, development and protection of the ETJ and NHCC area, an inventory-description of their physical, biological, social and economic resource factors was made. Each resource factor has been evaluated as to its past, present and future environmental significance. Environmental impacts on the resources, brought about by present and future land use planning and development, are ecologically discussed (Abramovitz 1999). Observations and recommendations are given for future planning and development in the area. Most recent used guidelines by government agencies for accessing these type resources were applied (Freeman and Jenson 1998).

The ETJ and NHCC are located in a narrow valley-cove-landform that extends approximately four (4) miles eastward from a high gap-Hominy Creek Gap-within the Town of Canton Corporate limits, and from there into the French Broad River Basin at the Haywood-Buncombe County line.

For the purpose of this report the valley-cove landform that extends approximately 4 miles eastward along Highway 19 & 23 will be referred to as the North Hominy Creek Corridor (NHCC) or at times simply as Corridor or valley-cove.

Figure1. Map of North Hominy Creek Corridor (NHCC)
And 1- Mile Extraterritorial Jurisdiction (ETJ)
Extension of Town of Canton

Legend: NHCC - Corridor From Hominy Creek Gap To
Haywood-Buncombe County Line
Canton City Limits
ETJ Boundary
Motorsport Park



PHYSICAL FACTORS

Geography of NHCC: This area has been a major transportation Corridor from the French Broad River Basin into the Pigeon River Subbasin, since the first white settlements began east of the Blue Ridge in the late 1700's. It was the only low-passage over the high New Found Mountains that early settlers could negotiate in their westward movement into interior western North Carolina.

Today, it is the gateway for all of western North Carolina's main east-west highways, 19 & 23 and I-40, and the Southern Railroad.

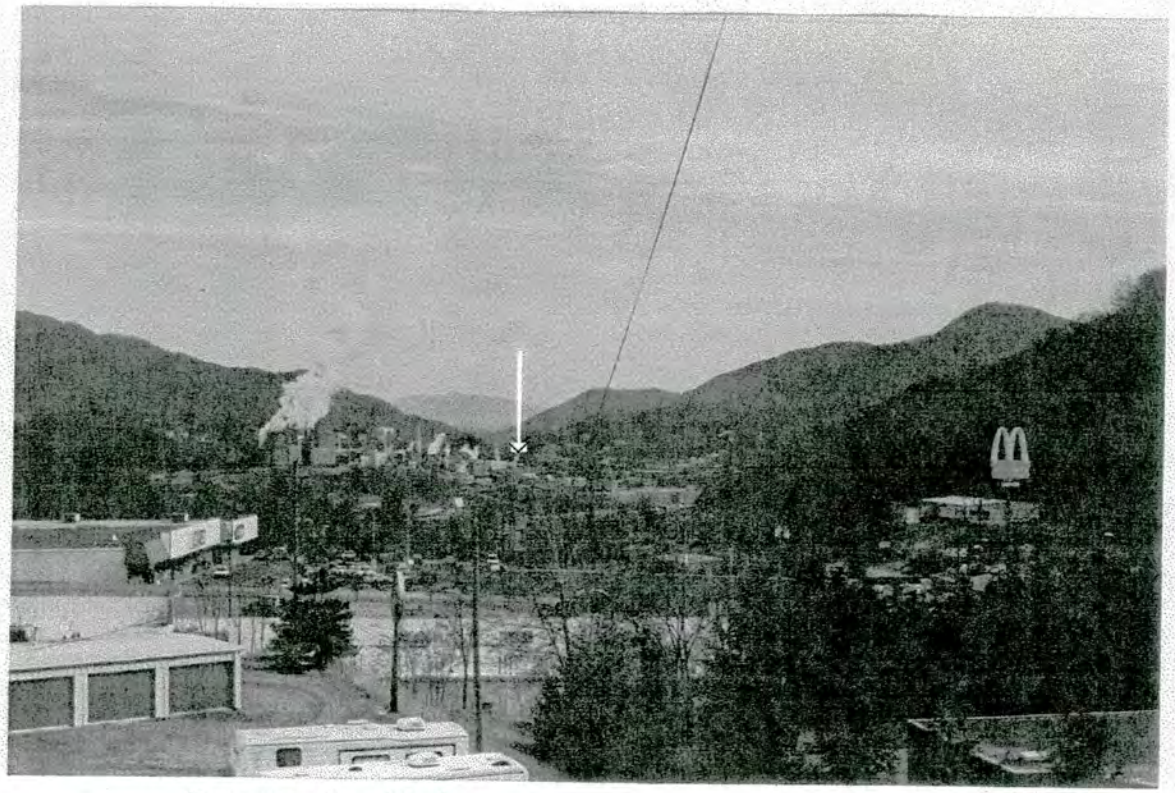
Hominy Creek Gap: Arnold Guyot was a famous Swiss geographer who surveyed and described the complex western North Carolina mountain system from 1856 to 1860. In 1863 he reported his results in a manuscript-Notes On The Geography Of The Mountain District Of Western North Carolina- to the Director of the Coast Survey at Washington. D.C. Unfortunately, this important piece of history and geography remained buried in official files until 1929 (Crittenden 1938).

Guyot's work is of extreme importance in understanding the early and present history of the NHCC. For example, very few natives of Haywood County-especially those in the Town of Canton-know that he measured and named the high eastern gap, where highway 19 & 23 leads into Town from the east. He named this high-broad gap Hominy Creek Gap. He recorded: "the Hominy Creek Gap on the summit of the Turnpike from Asheville to Waynesville, in the Big Pigeon Valley is 2668'." Canton did not exist at this time. Hominy Creek Gap is shown in Figure 2.

He described the Turnpike (toll road) as, "the main communication westward is the new and good turnpike road from Asheville to Waynesville, Webster, Franklin, Murphy and Ducktown Tennessee". A stage coach line served this route until the coming of the railroad to Canton in 1881.

The present Hominy Creek Gap roadway elevation, where Hampton Heights intersects with 19 & 23, is approximately 2640'. A USGS Bench Marker records the elevation at Canton as 2609' (USGS 1990). Further in this report it will be revealed that the NHCC is an area of outstanding historic significance.

Figure 2. Hominy Creek Gap (arrow)-Looking East From Radio Hill



Swannanoa Mountain Far
Horizon-Beyond Arrow

Hominy Creek Gap Where Highway 19 & 23 Intersect With Hampton Heights (right)
From Central Methodist Church Parking Lot.

Hominy Creek was named before the Revolutionary War by a party of South Carolina hunters. Legend has it that the hunters camped along the creek and ate hominy for their first supper (Powell 1976).

Circa 1880 a deep-cut was made into part of Hominy Creek Gap to allow construction of the Western North Carolina Railroad-the first railroad into interior western North Carolina. Only a few homes and a post office were in the area, just west of the Gap in a community called Ford Of Pigeon. Locally, in later years, the deep-cut was referred to as the "Cut Bank," and the steep eastern slope of the gap was called "Canton Hill"-present route of Highway 19 & 23 (see Figure 3).

Canton Hill: This is a term used by Canton natives. It describes the sharp descent in roadway elevation from Hominy Creek Gap to the valley-cove floor. The change in elevation is approximately 230 feet in 0.8 mile, producing a road grade of approximately 5.5%.

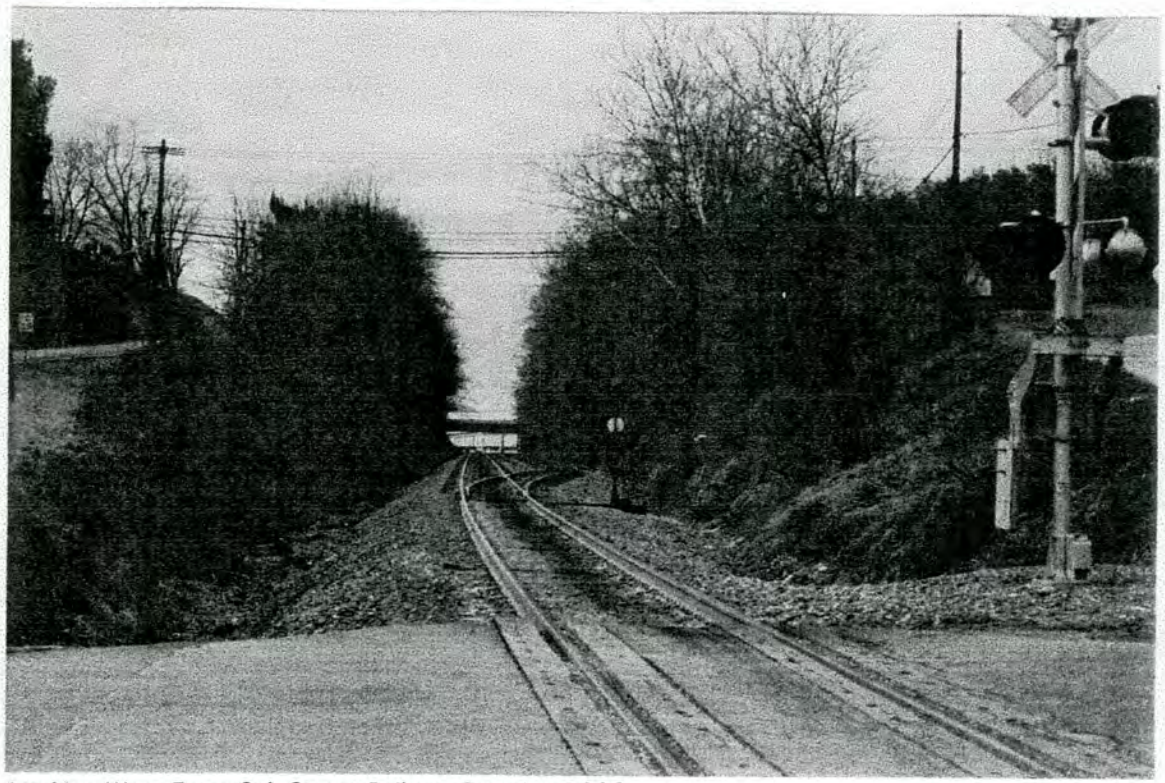
From the bottom of Canton Hill, North Hominy Creek flows parallel on the south side of 19 & 23 through the narrow valley-cove to the Haywood-Buncombe County line-a distance of 3 miles. Just west of this point it passes underneath highway 19 & 23, and flows through a steep- sided gorge in the Newfound Mountains, and then into Buncombe County.

OBSERVATIONS AND RECOMMENDATIONS: The NHCC is an area of outstanding natural, historic and economic significance. Classic examples of early pioneer life took place at Turnpike, a community in Buncombe, just over the Haywood-Buncombe County line. It got its name from the Turnpike (toll road) that ran from Asheville to Ducktown, Tennessee. The Turnpike area will be discussed further in describing the SOCIAL RESOURCES of this area.

Buncombe's present Landuse Planning and Zoning underway includes special attention to future development at the 1-40 and 19 & 23 highway intersection at Turnpike (BCPD 1998 and BCBC 1999).

In the 19th century the narrow valley-cove possessed outstanding natural and scenic feature as described by William Brewster of Harvard University, an early scientist visiting the western North Carolina mountains in 1885 (Simpson 1980).

Figure 3. Deep Cut (cut bank) For Railroad Through Hominy Creek Gap
Excavation Circa 1880. Highway 19 & 23 Left On Hillside 1999



Looking West From Oak Street Railway Crossing 1999

As previously pointed out, the NHCC contains the past and present main-ground-transportation routes into interior western North Carolina. It is the east-west commercial and commuting route that supports the major industries, businesses and tourist industry of western North Carolina. It is indeed the "Gate Way To The Smokies"- the natural, historic, scenic and cultural features of western North Carolina.

Planning should be undertaken with Buncombe County to connect NHCC with a Historic Heritage Trail System for visitors to western North Carolina. There are great opportunities to provide interpretive and visitor use facilities that tell the natural and cultural heritage-story of Haywood County. In turn these developments would boost the economy of the Canton and Turnpike areas.

For future planning the Town of Canton may wish considering extending its corporate limits to the Buncombe County line. This action would permit cooperative activities and agreements with Buncombe Officials in developing the NHCC, and their contiguous historic site at Turnpike. Of most importance, for mutual economic benefits to both counties, is to develop cooperative agreements in sharing and development of infrastructures (sewer, water, etc.) in the Corridor.

Town officials should work with the North Carolina Department of Cultural Resources, Division of Archives and History, in restoring historic interpretive markers, such as the Rutherford Trace Markers that have been removed during maintenance and construction of highway19 & 23. An interpretive Marker should be placed at Hominy Creek Gap that tells the story of the famous Swiss geographer, Arnold Guyot.

Geology: A basic understanding of the geological forces that made and shaped the NHCC are needed to plan, develop, maintain, interpret and protect its features.

NHCC shares in a classical geological history, which is an integral part in understanding the complex geology of the southern Appalachians. The bedrock of our mountains in western North Carolina are very old. Some are over a billion years old, while other younger rocks are hundreds of millions years old. All of these rocks have been through about every "geological accident" imaginable (Cook et. al. 1979)

(Smathers 1986). Many, after being formed, have been remelted and reformed several times (metamorphosed) through geological forces. Rocks of the NHCC are classified as metasedimentary-metamorphic rocks.

The origin of the rocks and the western North Carolina mountains are explained through plate tectonics. Much of the following explanation was taken from the publications: Geology Of The Sandymush and Canton Quadrangles, North Carolina (Merschant and Wiener 1988) and A Geologic Adventure Along The Blue Ridge Parkway In North Carolina (Carter et. al. 1999),

A geological time table scale is shown in Appendix 2 for reference purposes.

Continental Plates: Geologist theorize that all the earth's continents float upon a fluid-like mantel, and that over the ages because of convection currents in the mantel, they tend to coalesce with one another for a time, and then later, separate and drift away. This action is called continental drift, and it explains how some continents, now far removed from one another, were once fitted together like a giant jigsaw puzzle. For example, inspection of a world map, reveals that the west coast of the continent of Africa fits nicely with the east coast of South America.

Super Continent Basement Rock: The rock that was later to become the bedrock of the western North Carolina mountains and valleys were formed about 2 billion years ago in the Proterozoic Era. The metamorphic rocks of that Era are called "basement rocks", because they are the oldest rock formation found in western North Carolina.

Geologists define the episodes of mountain building as orogenies. They have identified four major episodes of mountain-building that have occurred, over geological time, in western North Carolina area.

Grenville Orogeny-The First Mountainous Formation: During the time described above, the North America continent was linked with other continents to form a super continent. About 1.1 billion years ago the super continent collided with another starting a period of mountain building that reformed (metamorphosed) all the older rocks. This billion year old event is called the Grenville

Orogeny. The mountains formed during this time were immediately attack by weather and other erosional forces.

For about 400 million years after the Grenville Orogeny, little can be determined from the rock record. However, it can be inferred that erosional forces reduced the mountains to hills and deposited the eroded materials into broad plains and ocean basins.

Continental Drift: About 700-800 million years ago, in the late Proterozoic Era, the old super continent began to break apart, because of deep convective forces in the viscous mantle. Geologist call this process continental rifting, when continents move apart leaving a thin sagging continental land mass between them.

This deep-sagging trough soon filled with sediments from the eroding continents. The deep buried sediments under pressure eventually turned into sedimentary rock, and the sagging floor and active rift zone eventually broke the continents apart. Lava from the mantle welled up into the rift zone, forming an ocean floor of volcanic igneous rock called basalt. Simultaneously, volcanoes spouting lava developed along the rift zone.

As the continents continued to drift apart the ocean widen, and the eroded Grenville basement rock sediments filled the edge and offshore depths of the continents and the ancestral Atlantic Ocean Basin. This erosional sedimentation event lasted for about 250 million years. Sand, gravel, silt and clay sediments accumulate up to three (3) and four (4) miles thick forming sedimentary rocks. Some of these sedimentary rock sequences contain volcanic igneous rocks that formed intermittently during sedimentation period. Most of the rock we see in the NHCC are metamorphosed sedimentary and volcanic rocks that formed during that time.

The Quiet Period: In the Cambrian period-550 million years ago-rivers deposited sediments in the warm waters of the coastlines for about 80 million years in this part of the ancient Appalachian Mountains. During this "quiet time" crab-like organisms called "trilobites" and other unique living things flourished in the coastal areas. Large limestone reefs formed. However, in time the ever-restless geological forces within the earth were to make future change in the North American environment.

The ancient Atlantic Ocean, which had been slowly opening for over 200 million years, began to close. Magma of the earth's mantle worked its way into the crust, and also into the overlying ocean floor sediments. There it crystallized into plutonic igneous rocks.

Taconic Orogeny-The Second Mountainous Formation: This major orogenic event started about 475 million years ago in the southern Appalachian region. It was characterized by the continuing closing of the ancient Atlantic Ocean Basin and the colliding and compression of the North American plate with a chain of eastern volcanic islands.

The volcanic islands formed when the North American crustal plate began to press against and dive underneath (subduction) the ocean-crustal plate. This action resulted in the earlier deposited sedimentary rock being thrust up and over the older basement rocks (Grenville rock), along hugh faults or cracks in the earth's crust.

While these thrusted sedimentary rocks were being metamorphosed and folded, the underlying, older Grenville basement rocks were being metamorphosed for the second time. Deep in the crust heat was generated by the colliding rocks. The heat became so intense that it melted the older rocks into magma, which rose toward the surface and crystallized. This period lasted for about 5-10 million years and produced a region of high mountains. A period of perhaps 50 million years followed with intermitted uplifts.

Intensive weathering prevailed during and after the Taconic mountain building period. There is evidence that weathering and erosion eventually outpaced the mountain uplift, and they eventually wore the mountains down to hills and plains. During this time the first land plants appeared on planet earth. They covered the lowlands with giant forest of primitive Horsetails and Psilotums. A quite period of geological history occurred.

Acadian Orogeny-The Third Mountainous Period: After the Taconic Orogeny, the Ancient Atlantic Ocean Basin continued to close, and in doing so collisions with eastern volcanoes continued. As in the Taconic Orogeny, generated magma continued to rise in the crust and produce crystalline rock (plutonic igneous volcanic). Faulting and metamorphism continued to prevail. This latter renewed period of mountain building is considered by some geologists as the Acadian Orogeny. Some call it the Devonian

Orogeny, because it occurred during that geological time period (see geological time table Appendix 2).

This period is especially important to western North Carolina, because it was during this time that the mineral rich rocks of the Spruce Pine, North Carolina area were formed. Study of radioactive minerals in these crystalline-plutonic igneous rocks prove that they formed during Devonian time. These rock are often referred to as pegmatites, and they contain high quantities and quality minerals such as feldspar, mica, quartz and gem stones. Small intrusions of pegmatites are found in some exposed road-cut-rock in the NHCC.

Alleghanian Orogeny-The Fourth Mountainous Period:

The final episode of mountain building in the southern Appalachians-the Alleghanian Orogeny-began about 300 million years ago in the Carboniferous time-period of the Paleozoic Era. The North American plate, and its ancient adjacent-landmass plates, which had drifted away from one another in the Grenville Orogeny, were now moving back closer to one another.

Eventually, the Ancient Atlantic Ocean closed. When it did the North American plate crashed into the ancient Gondwandland continent, creating a spectacular mountain system that was as high as the present Rocky Mountains. Some geologist believed that these mountains attained heights of 20,000 feet, others believed they may have been as high as the present day Himalayas (Mount Everest). The Gondwandland landmass was made up of the combined plates of Africa, South America, Antarctica, India and Australia.

Creation Of The Appalachian Chain And Pangea:

The great, high-mountain system, now referred to as the Appalachian Chain, stretched from Canada to Alabama. In this dynamic movement, the bedrock we now see in western North Carolina was lifted up, folded and shoved more that 200 miles to the west along major thrust faults in the earth's crust.

By the time the continents ceased colliding with one another, which was about a 50 million year period, they had combined into the largest supercontinent ever known-Pangea. Some geologists and paleontologists theorize that creatures, such as ancestral forms of dinosaurs, could have migrated from North Carolina to Australia without ever getting their feet wet!

The Demise Of Pangea: As we have seen in the past descriptions of the earth's geological history, "nothing is constant on this planet except change." The great megacontinent of Pangea lasted less that 100 million years.

About 220 million years ago, during the time when early dinosaurs and reptile-like-mammals roamed Pangea (Triassic period rock of the Mesozoic Era reveal their fossil remains), the restless earth's interior began to manifest itself. A great rift began along the eastern edge of the Appalachians mountains from New England to Florida.

As explained above under continental drift, the internal convective forces in the mantle and crust, which drive plate tectonics, began to start rifting the great megacontinent apart. Again, the Atlantic Ocean began to form between the drifting continents. As Africa and South America split apart, they took with them their matched-rifted-coastlines, which make perfect fits on today's world maps.

During the Pangea period of continental coalescence, Africa had a close connection to the now North Carolina section of the southern Appalachians. When Africa pulled away, it took with it many of the present western North Carolina rock units that the two continents share today. In addition, Africa left behind a part of its Pangea land mass that now makes up the state of Florida.

Southern Appalachians Continued To Rise: In the absence of plate tectonics in the southern Appalachians, for the past 65 million years (Close of the Mesozoic Era and beginning of Cenozoic Era) the mountains of western North Carolina have had sporadic and intermitted uplift. The Blue Ridge and Great Smoky Mountain ranges, and their numerous cross ranges such as the Blacks, Balsams, Nantahalas and Cowees have had thousands of feet of rock eroded away from their overburden surfaces. Yet, these orographic features have continued to rise and take shape above the landscape. Geologists, in part, use the Isostasy Theory to explain this phenomenon.

Isostasy Theory: "The earth's outer layers are divided into low-density and high-density material. Less dense material in the crust and uppermost mantle essentially float on higher density material deeper in the mantle, just like the way a layer of oil floats above a layer of water. Like oil and water these earth layers are in balance with each other. However, when extra material is added to

the earth's uppermost layer this balance, or equilibrium, is disturbed, and the upper layer is depressed down onto the higher density material. This action is much like the way you depress a seat cushion when you sit down. When this extra material is removed, the layer springs back up, or rebounds, in the same way that the cushion rises after you stand up. This crustal phenomenon is called isostasy" (Carter et. al. 1999).

If we apply the Isostasy Theory to the sequence of geological events, starting with the Alleghaney Orogeny, and into the early stages of the present continental drift, we can see where the theory has merit.

Erosional forces began to severely act upon the high mountains during and through the Alleghanian Orogeny. Over the millions of years great rivers carried hugh amounts of eroded material away from the young mountains and deposited it eastward- reducing the high mountains to rolling hills with broad valleys and plains. The regional topography must have looked much like our North Carolina eastern Piedmont Province today. As the Atlantic continued to open, rivers carried the heavy burden of sediments into the ocean basin.

With the heavy overburden of younger rock removed from the lower layers of older rock, these rock-roots of the once giant mountain chain rose above the Piedmont. As these older and very highly erosional resistant rock of the Grenville and Taconic Orogenies were isostastically raised, stream flow accelerated and new drainage systems developed. Watersheds with meandering streams were captured by those with more vigorous eroding headwaters. Today we owe the beautifully carved orographic features of the Blue Ridge, Great Smokies and their numerous cross ranges to this type erosional stream capture.

The Great Rivers: It is obvious that great-river drainage systems developed during this wearing away of the mountains in the late Alleghanian Orogeny and Cretaceous Period. Undoubtedly there was an ever evolving change of drainage systems in the millions of years of erosion. In studying the development and sequence of these ancient watersheds, in relation to the present Pigeon and French Broad River Basins, application of the Isostasy Theory helps one to develop a more definitive explanation and view of the hydrological dynamics then and now.

La Groce's Great Mythical River Of The Southern Appalachians: In examining the present river-drainage systems of the southern Appalachians and western North Carolina, La Gorce (La Gorce 1926), compared the present Pigeon, French Broad, Hiwassee, Little Tennessee, Nolichucky and Watauga Rivers to pirates that have robbed and looted a once great-single-river system that passed through western North Carolina.

He describes the great river system as a magnificent stream that occupied a "canoe-shaped valley in the southern Appalachians, which began in southwest Virginia and ended in northwest Georgia. One branch of this great river rose in southwestern Virginia and flowed in a southwesterly direction past Asheville, where it was joined by the other branch, which had its headwaters in the extreme southwest corner of North Carolina. There it flowed by Murphy, Bryson City and Waynesville to its confluence with its sister fork a little below Asheville'.

"Their mingled waters run along the upper valleys of the present French Broad River and Mud Creek-thence into South Carolina and out to the Atlantic Ocean." Thus, according to La Gorce, all waters collecting on the ancient southern Appalachians flowed to the Atlantic. However, today every school boy and girl, familiar with western North Carolina geography, knows that only those waters rising on the eastern ramparts of the Blue Ridge Mountains, south of the Roanoke River water gap, flow to the Atlantic. While those rising on the western slide of the Blue Ridge Range south of the Roanoke Gap, and all of the Cross Ranges and Great Smokies flow to the Gulf of Mexico.

In describing the present Haywood and Buncombe County river drainages, the Pigeon and French Broad Rivers respectively, he explains how these streams, which were once ancient tributaries of the great river, eventually pirated (captured) its waters.

Origin and Future of Hominy Creek: La Gorce does not explain how the intermountain rivers arose and became "pirates". Yet, he condemns them to the same future and fate that they brought upon the once magnificent great river.

For example, he states that the French Broad captured hundreds of miles of drainage area and large sections of both forks of the ancient

river. And that the Pigeon continues to pound its way at Waterville into the ancient drainage basin in the neighborhood of Waynesville. He points out that Hominy Creek, "which once formed part of the channel of the southwest fork of the captured river, has been eating its way into the present day divide between it and the Pigeon. Its head is now only half a mile away from that of the lazy Pigeon and many feet below the later's bed. The latter area described is Hominy Creek Gap at Canton and the foot of Canton Hill in the NHCC.

La Groce failed to observe that modern man with his engineering might has advance the environmental erosional process at Hominy Creek Gap by millions of years. Here circa 1880, a "Deep Cut" was made in the Gap to allow construction of the Western Carolina Railway line from Asheville to Murphy. In doing so, it appears that human ingenuity has inadvertently assured the future geological capture of the upper Pigeon River drainage basin at Canton by the French Broad.

The deep railroad cut leaves only a few feet difference in elevation for natural-water-flow from the Pigeon to the expanding French Broad Basin. Probably, one of the monstrous 500 year flood events on the Pigeon headwaters will herald this event, when flood-waters will partially spills over at Canton into the "deep cut" and then on through NHCC to the French Broad River.

NHCC Rocks: Geologist have mapped the NHCC area as the Ashe Metamorphic Suite, which is a heterogeneous metasedimentary unit containing repeated interlays of mica schist, metagraywacke, biotite gneiss, minor calc-silicate granofels and rare amphibolite. Radioactive dating of these materials prove that some had their original depositions and formations during the Grenville Orogeny (1.1 billion years ago), and others during the Taconic Orogeny (700-800 years ago).

Schist dominates the mapped unit from Hominy Creek Gap to the vicinity of the foot of Canton Hill. From there to the vicinity of Happy Hollow Road the Richard Russell Formation dominates, which is composed of biotite gneiss with interlays of amphibolite; and common migmatitic. From that point on to the Buncombe-Haywood County line near Turnpike, gneiss dominates with biotite gneiss to metagraywacke interlayed with sillimanite-kyanite-garnet-mica schist and calc-silicate granofels.

OBSERVATIONS AND RECOMMENDATIONS: Geology of NHCC is diverse and complicated-similar to most of North Carolina's Mountain Province. However, this knowledge must be understood and applied to any development and utilization of the land.

A very important finding in this study is that the slopes of the valley-cove are prone to landslides, because of the type of bedrock present. These micaceous-foliated-schistose rock, become exceedingly "greased" when they absorb large quantities of rain water. We see and experience similar landslides on I-40 in the Pigeon River Gorge. Review of NC Department of Transportation records and news accounts reveal that landslides have occurred along NHCC slopes, and some have blocked lanes on 19 & 23 for considerable time.

Potential landslide areas should be graded and stabilized with dense native vegetation cover and engineered drainage structures. This type preventative measure would be compatible in developing the sides of the valley-cove as a greenway recreational area.

The excellent knowledge available on NHCC geology and mineralogy, makes it an outstanding outdoor laboratory-study site for educational purposes, museum exhibits and roadside interpretive exhibits.

Soils: Before the construction of roadways and the railway through the narrow valley-cove of NHCC, the virgin soils were rich and fertile. They had formed over hundreds of thousands of years from the interactions and interrelationships of the geological parent material (rocks), climate, plants, animals and prevailing physiography.

Their original richness and productivity have been described by early visitors and explorers to the area in the late 1700's and 1800's. They remarked about the giant forest-trees that these soils supported in the late 1700's and 1800's. Chestnut, Walnut and Cherry trees up to 6-7 feet in diameter were frequently reported in forest stands.

It is rare to find a pocket of the original natural floodplain and stream terrace soils. These area have been leveled, filled and removed through highway and railway construction. Slope soils on both sides of the valley-cove have been destroyed or drastically

altered through road cuts and fills, urban development and forest cover removal for agriculture and timber.

In the geography discussion above, the topographic landforms are steep-sided slopes of a narrow valley-cove, being dissected by Hominy Creek. On some sites, soils on steep slopes have avalanched into the valley during or after heavy rainfall. These colluvial deposits are frequently found at the foot of steep slopes. Department of Transportation (DOT) has maintenance records of these slide-events.

High elevated parallel north and south ridge lines of the gorge reduce the exposure of the valley to direct solar radiation. These soils are subjected to lower air and soil temperatures than those on south facing slopes.

North facing slopes retain snow and other types of precipitation for long periods. They retain frozen upper levels of their profile for extended periods of time in winter months.

South facing slopes are subjected to more frequent freeze-thaw cycles than north facing slopes. The result is that south facing ridge lines of NHCC are subjected to greater erosion. This physical condition contributes significantly to the frequent sloughing-off or avalanching of south exposed hillsides.

Present soils of the ETJ area have been mapped by the Soil Conservation Service (Allison 1997). Their boundaries have been mapped on aerial photos, and each soil type is described as to its classification, potentials and limitations for land use planning and development.

The following NHCC mapped soil units and their general descriptions are listed below:

Cullowhee-Nikwasi Complex, 0-2% slopes. These are nearly level, poorly drained soils found on flood plains, and along stream channels. They are subject to flash flooding. The profile varies from brown to grayish sandy loam in the first 30 inches, and surface runoff is slow even in bare areas. The Nikwasi unit is usually a wetland. These units my best be used for pasture or recreational activities.

Evard-Cowee Complex, 15-95% slopes, stoney. This complex is on steep and well drained slopes. Stones are scattered on the surface. They vary from dark brown to yellowish-reddish in the first 40 inches of the profile. Surface runoff is rapid in bare areas. Surface to bedrock is about 60 inches. It is subject to avalanching on road-cut slopes. Frost action is moderate; Too hazardous for timber management, and erode quickly into nearby streams; Poorly suited for building (septic system leaks, etc.) and pasturing. These soils are best left for natural vegetation regeneration, and recreational activities that have minimal impact on the ground surface. They need water runoff controls.

Evard-Cowee Complex, 15-30% slopes. Same as above description with somewhat reduced erosional susceptibility.

Evard Cowee Complex, 30-50% slopes. Same as above description with somewhat reduced erosional susceptibility.

Hayesville-Urban Land Complex, 2-15%. This soil is found in very-steep-well drained areas of ridges and side slopes of hills and low mountains; Generally mixed with urban land; First 30 inches of profile red to reddish clay loam, from there on down mostly white saprolite to multicolored saprolite of fine sandy loam. Urban land portion with impermeable layer of paved roads, etc. Moderately suited for building sites, but barren areas must be vegetated to prevent erosion. Moderately suited for roads and trails.

Hayesville Clay Loam, 8-15% slopes, eroded. A very deep soil found on steep-well-drained ridges and side slopes of hills and low mountains; First 30 inches of profile varies from red to reddish brown that overlays white to multicolored saprolite of fine sandy loam; Loading support on this soil for buildings, etc. is low when it is wet. Erodes easily. Although this unit is used for pasture, cropland, orchards, etc. it is also highly erodable; Moderately suited for building site developments, because of its clay content, but must be sodded or well sod established to prevent erosion; Moderately suited for septic tanks.

Hayesville Clay Loam, 15-30% slopes, eroded. Same as above, with exception that more severe slope makes it less suitable for building, and to do so would require special design; It is better suited for wildlife habitat or green spaces.

Hayesville-Urban Complex, 15-30% slopes. Paved-over-soil profiles or graded area with profiles as described above; Greater slope, impermeable urban surface creates moderate to severe stormwater runoff.

Saunook Loam, 2-8% slopes. These are gently sloping, very deep well drained soils in coves, in drainage ways, on toe-slopes and benches of low mountains and intermountain hills. Stones are scattered on the surface. Down to 9 inches from the surface, the profile is a very dark brown loam. From there to about 65 inches it varies from dark yellowish-brown cobbly sandy loam. Air and water move through this soil at a moderate rate however, it generally has seeps and springs below and at the surface. The land is usually used for pasture, croplands and orchards. Some of these sites are suitable for housing developments (suited for septic systems), but more ecologically suitable for timber production, wildlife habitat or recreation.

Saunook Loam, 15-30% slopes, stony. Description much the same as listed above, but less desirable for housing development, because of steep slopes and stony content. Found mostly in head of coves.

Trimont Gravely Loam. 50-95% slopes, stony. This very steep, very deep well drained soil is on north-to-east-facing side slopes of low mountains, and on south-to west-facing side slopes shaded by adjacent taller mountains. Stones are scattered on the surface. Air and water move through this soil at a moderate rate. Depth to bedrock more than 60 inches; Soil is poorly suited for crops, pasture and orchards; Poorly suited for building sites and septic sites; Best used for woodland and wildlife habitat.

Udorthents Loamy. Here the natural soil layers have been destroyed by earth moving activities such a scraping, grading, backfilling, trenching and excavation. All the soil characteristics have been altered, and the original series cannot be identified. This unit consists of highways, roadway shoulders, buildings, backfill, interchanges, landfills, etc. These areas often have low permeability. High stormwater runoff and flooding can prevail during high precipitation episodes. Fill materials derived from micaceous

saprolite and metasedimentary rock, when wet, have potential for downslope movement. Cut slopes can landslide or avalanche.

Urban Land. This mapped unit consists of areas where more than 85% of the surface is covered with streets, parking areas, buildings, railroad facilities and other impervious materials. Natural soils have been covered, removed or greatly altered by cutting, filling, grading and shaping during the process of urban development. These type surfaces have high stormwater runoff and hazardous flooding. They can produce microclimates with higher ambient temperatures than the normal prevailing climate.

OBSERVATIONS AND RECOMMENDATIONS: Soils of the valley-cove floor are basically man made urban soils. This has come about, because the narrow corridor has been the main transportation route into interior western North Carolina, first by the early settlers arriving in the late 1700's, and presently the traffic jammed I-40 and highway 19 & 23.

As pointed out before, the virgin soils of the valley floor have been scrapped away, filled and covered with gravel and asphalt for roadway and urban development. Majority of the land surface is impervious and prone to high stormwater runoff. Near the creek banks flooding is frequent after heavy rainstorms in the 12,000 acre North Hominy Creek watershed. Large portions of this "flashing runoff" is the result of increased urbanized lands, I-40 stormwater runoff diverted into feeder streams, and loss of forest cover in the watershed.

Geology and physiographic studies of NHCC reveal that even before man altered the area, it was under intense natural erosion by water and other geodynamic conditions.

Hominy Creek has been "eating land away" for millions of years, creating the narrow valley-cove. It has carved its way into the high Pigeon River Subbasin. Great natural forests for eons have fought an ever-loosing battle in trying to help stabilize the steep-side-ridges and avalanche-debris-colluvials of the enlarging gorge. Dynamics in vegetation cover over the millions of years was nature's way in slowing the eroding process, and thus creating a wild and beautiful landscape before European settlement.

Considerable prevention of flooding can be accomplished through restoration of the original riparian forest-a greenway-along Hominy Creek. In addition to diking, stormwater catchment systems can be engineered throughout the corridor to store and timely-release flash-flood waters. Attractive educational and ecological restorations of wetland habitats along Hominy Creek could make the area an outstanding Recreational-Study Site.

Soils of the urbanized NHCC area are not suited for septic systems as will be shown later by failing systems that are contaminating Hominy Creek. It is imperative that water and sewer lines be constructed for present and future developments.

Hydrology: Historic development of the NHCC hydrological system parallels that of the area's geological history, especially that period for the past 40-60 million years, when watersheds were undergoing dynamic changes. Great revelations come about when one discovers these ancient changes in the western North Carolina landscape , and the influence they have had upon the present socio-eco-political conditions of the area.

Every Haywood county municipal planner, educator and public official should be aware of the environmental effects that the Pigeon River Subbasin watershed has on the county's future development and operations, and in addition, its environmental effects on the adjacent French Broad River Basin watershed. To help local governments understand and apply this responsibility, North Carolina state government has classified and is monitoring it river basin water supplies (DENR/DEM 1995).

Environmental Impacts: Ask most any native of Haywood and they will tell you that the county is drained by the Pigeon River. But what a surprise many had when they learned in 1991 that Asheville-Buncombe County Water Authority was considering tapping 12,000 acres of Haywood's North Hominy Creek Watershed for a drinking water supply. North Hominy Creek is a part of Buncombe's French Broad River Watershed. Buncombe officials were desperate to find an additional water supply to accommodate the County's fast population growth and urban development. A map of the Haywood County North Hominy Creek Watershed is found in a packet on the inside back cover of this report (Smathers 1992a).

The NC Watershed Protection Act of 1989, required specific restrictions for stream-side vegetation filters, stormwater management controls and home construction densities to protect drinking water supplies-a prospect that had many Haywood County property owners "up-in-arms". This controversy was never settled, until Buncombe County found an alternate source for its drinking water supply in the Mills River of Henderson County.

The Mills River alternate water supply is supposed to meet Buncombe's drinking water supply requirements until 2040. After that time, where will the County look for water if its population continues to grow? There is every reason to believe that by 2050, Buncombe will need additional water, because of it fast growth and development in south Asheville, and its continued urban growth in the rural corridor along I-40 and 19 & 23-west to the Haywood-Buncombe County line at Turnpike. The present Buncombe County Land Use Plan lists Haywood's Pigeon Watershed as a water-reserve for future consideration in development plans.

Obviously, the prevailing topographic watershed condition above was not considered, when Haywood County was formed from Buncombe in 1808. A review of the General Assembly legislation passed in 1808 to form Haywood County from Buncombe confirms this fact.. In reading the description of establishing a boundary line between the two Counties along high topographic watershed divides, it occurs that the surveyors deviated from this general plan, and placed the line just east of the NHCC gorge near Turnpike, where the Haywood North Hominy Creek flows into the main French Broad Subbasin. It is not known why the legislation did not establish the Haywood-Buncombe line along the present 12,000-acre North Hominy Creek watershed.

Had the contiguous county lines been established completely along Pigeon and French Broad watershed divides today, the Haywood-Buncombe County and Canton Corporate Limits would have shared the same boundary line at Hominy Creek Gap. One can only speculate what this political boundary would have had on the socio-economic development of east Haywood for the past 190 years. One can read and interpret the above legislation in George H. Smathers' book The History Of Land Titles In Western North Carolina (Smathers 1938).

Surface Water: The North Fork tributaries of Hominy Creek drain part of east Haywood County, and its South Fork tributaries

Surface Water: The North Fork tributaries of Hominy Creek drain part of east Haywood County, and its South Fork tributaries drain the Upper and Lower Hominy sections of Buncombe County. The Hominy is one of the major tributaries of the French Broad River Basin. Table1-Graph shows the estimated flow rate of North Hominy Creek at the Haywood-Buncombe County line.

Table1-Graph. Estimated Flow Rate Of North Hominy Creek

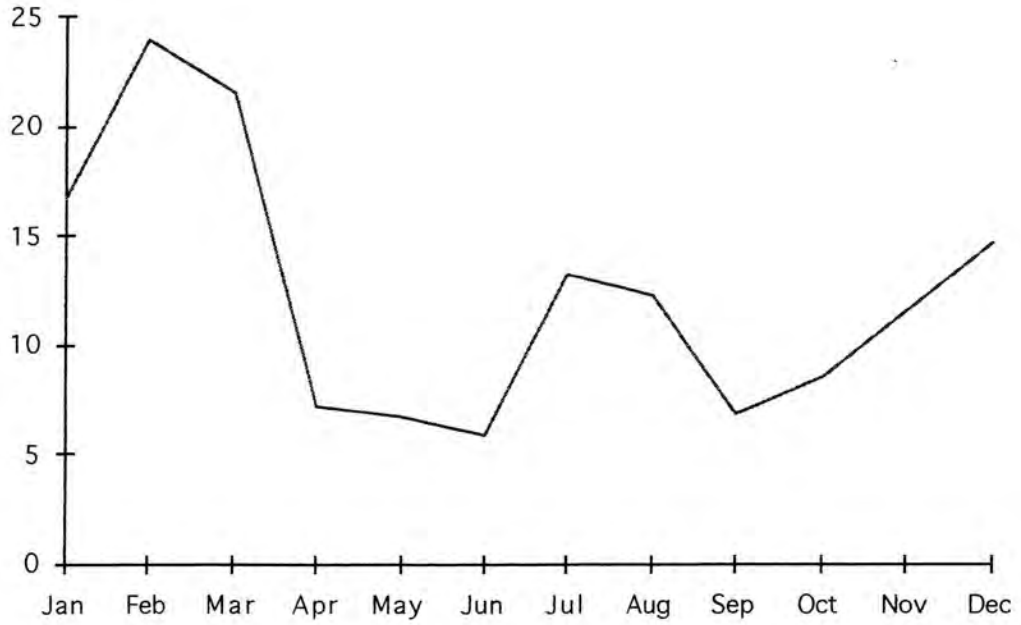
At Haywood-Buncombe County Line

Based on Avg. Monthly Records of Rainfall, Soil Moisture, and Evapotranspiration Rate (Extrapolated Data From Harwood Beebe 1979)

Avg. Projected Daily Flow (MGD)	Month
16.8	Jan
24.0	Feb
21.6	Mar
7.20	Apr
6.75	May
5.85	Jun
13.2	Jul
12.3	Aug
6.9	Sep
8.55	Oct
11.55	Nov
14.55	Dec
12.44	Year

Table1-Graph

Figure 1. MGD (million gallons/day)



Water Quality: Recent water quality check of the ETJ section of NHCC reveals that the stream is subjected to excessive nonpoint pollution from leaking septic systems and mechanical shops along the waterway. Data are recorded in Table 2.

Table 2. Water Quality Of Hominy Creek In ETJ Section Of NHCC, June 25, 1999, DENR

Fecal Coliform:	
Below Mechanic Shops.	560/100ml
Above Mechanic Shops	110/100ml

Pollutant	Above Shops	Below Shops
NH3 as N 610	0	<0.01 mg/L
TRN as N 625	0	0.1 mg/L
NO2 + NO3 as N 630	0	0.59 mg/L
P: Total as P 665	0	0.01 mg/L
Cd-Cadmium 1027	0	<2.0 ug./L
Cr-Chromium Total 1034	0	25 ug/L
Cu-Copper 1042	0	2.8 ug/L
Ni-Nickel 1067	0	<10 ug/L
Pb-Lead 1051	0	<10 ug/L
Zn-Zinc 1092	0	<10 ug/L

As shown in Table 2, there was a high increase of heavy-toxic-metals from Mechanic Shops. High increases of nitrogenous compounds and human fecal coliform are signs of failing septic tank systems. The latter is probably a function of the soils' low- permeability and high water table.

Floodplain: The NHCC valley-cove is a natural-active-floodplain that has become more prone to flooding, because of man's land disturbing activities, since the mid-nineteenth century. Natural flooding was a problem for the first transportation facilities established in the corridor in the late 1800's. In the past 50 years

devastating flood have occurred and lives have been lost in the Buncombe County Hominy Creek drainage system.

As described above, NHCC collects large quantities of water flowing from the Haywood County high-mountainous watershed. Past historic accounts have recorded fast rising walls of water in the narrow-valley cove.

Flooding: Episodes of isolated high rainfall in parts of the Hominy watershed can produce violent flooding in the narrow valley-cove floodplain. Large acreage of impervious pavement of Interstate 40 on the high north ridges adds high volumes of stormwater runoff into Hominy Creek. In addition, filling of the narrow flood plain with buildings and impervious areas, has exacerbated the natural flood-water storage problem. One of the most recent devastating floods occurred on November 29, 1977. Its destructive effects on homes, businesses and infrastructures at that time are shown in Figures 4, 5, and 6. In this same flood, a mother and her two small children were swept away in their mobile home and drowned in the Upper Hominy Creek section of Buncombe County.

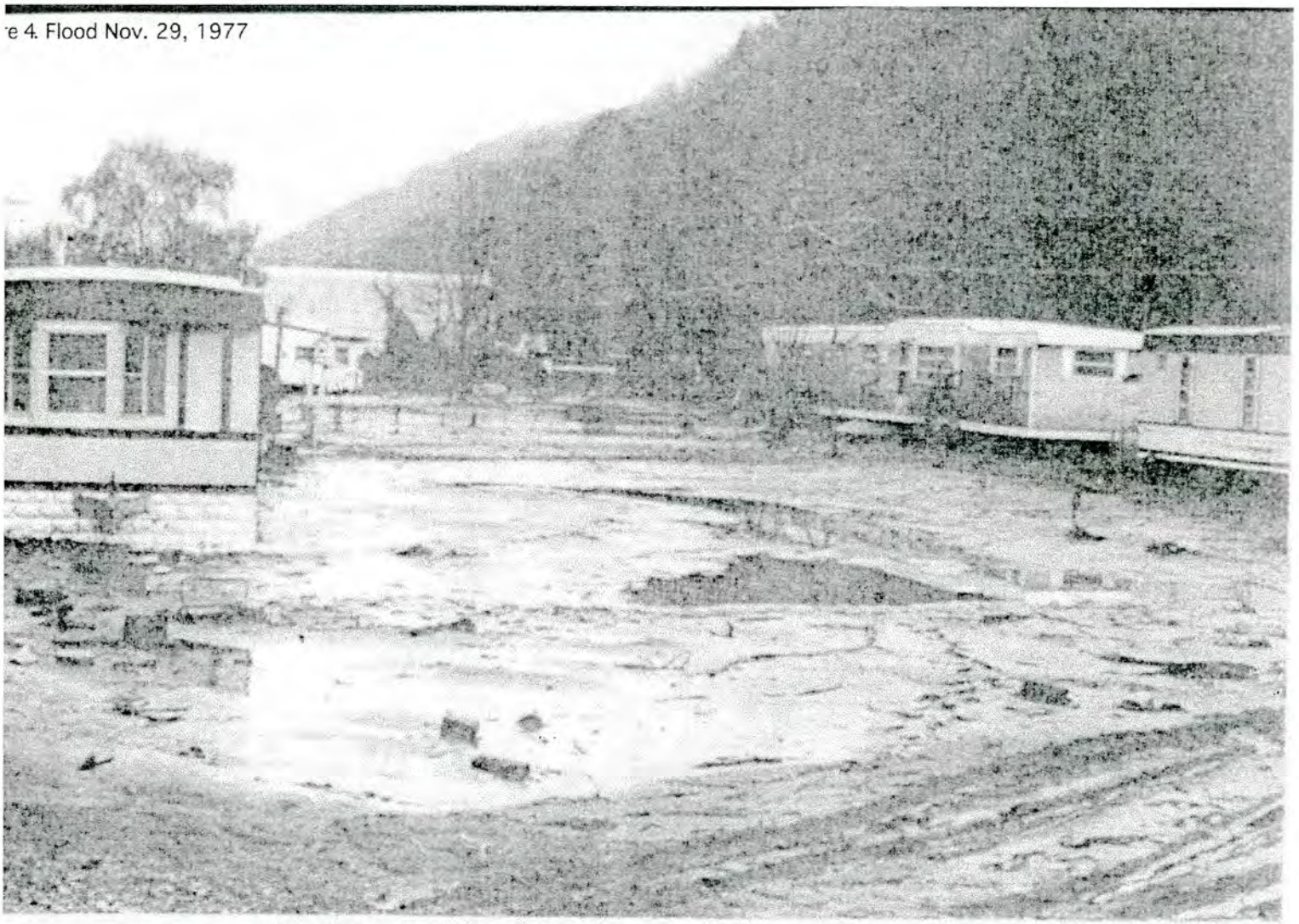
In the late1800's, railroad and stage coach lines developed and operating in the NHCC. Historic records reveal that they too were damaged during flooding conditions. William Brewster on his 1885 railway visit to interior western North Carolina, describes his delay at Turnpike, because of a railway trestle that had been damaged by a recent flood (Crittenden 1938).

Adjacent Upper Pigeon Subbasin Watershed: Haywood County's high orographic position places it in the path of cyclonic storms that dump large amounts of precipitation on the high mountain peaks and ridge lines.

In the higher elevated contiguous Pigeon River Watershed-west of Hominy Creek Gap-annual rain fall can exceed 80 inches/yr. at Richland Balsam, 6456 ft., (Pittillo and Smathers 1979). Past studies of fog interception, in the high forests of the Balsam Range, revealed that spruce-fir trees can double the annual precipitation beneath their canopy (Smathers 1982).

Long term climatic records show that the Pigeon River at Canton is subjected to flooding-some events (50-100 yrs. intervals) have been

e 4. Flood Nov. 29, 1977



Sea Of Mud Confronts Haywood Residents

ge puddles and a sea of mud confronted the residents of these mobile homes on the south side of Ashe- Highway below Canton Hill In Haywood County after Hominy Creek flooded the area. Six inches of nd water invaded some of the homes. (Canton Enterprise Photo) (Present ETJ Area)

e 5. Flood Nov. 29, 1977

Foundation Damaged By Hominy Creek

ominy Creek chewed away at the foundations of this auto paint and body shop near Canton in Haywc ty. The building is located on U.S. 19-23, east of Canton. (Canton Enterprise Photo) (Present ETJ Area)

Figure 6. Flood Nov. 29, 1977

Bulldozer At Work

A workman used a bulldozer to rebuild the approaches to a private access bridge across Hominy Creek in Haywood County. The bridge was washed out in the flood. (Canton Enterprise Photo) (Present ETJ Area)

devastating. For example, in 1940, a 24-hour 9-inch rainfall episode occurred over a 135 square-mile portion in the upper part of the Pigeon Subbasin. Flood waters over two (2) feet deep over-flowed into the Town's recreation area (old ball park) on Park Street-where the present Town Hall was built later. The nearby Champion Fiber Company(now Blue Ridge Paper Company) was devastated by the inundation. A man and wife were drowned along a tributary of the West Fork of the Pigeon above Lake Logan (TVA 1966).

Ground Water; Study of well data in the NHCC reveals a very productive aquifer. Drilled wells in the Turnpike area have produced water yields from 33 gallons/minute to 235 gallons/minute (see Appendix 3) This large volume of ground water is result of the geological and physiographical features of the area. The high elevation of the Pigeon river basin at the west end of the valley-cove (2609'), and the abrupt drop in elevation to 2250' at Turnpike, creates a perched water table with high static pressure on the valley-cove groundwater. In addition the high water tables of the contiguous ridges of the New Found Mountain Range add to the productive ground water supply.

OBSERVATIONS AND RECOMMENDATIONS: Buncombe County is considering Haywood's NHCC and the Pigeon River Subbasin as future water sources. It also considers Haywood as a contiguous County that it would consider developing cooperative, coordinated economic partnerships for future planning (BCPD 1999).

It would be prudent for Town of Canton and Haywood County Officials to explore with Buncombe County Officials ways to develop cooperative agreements in construction of infrastructures (water and sewer lines, etc.) and flood controls in the Corridor. For example, Canton would have little difficulty in extending a water line (gravity feed) to Turnpike, but more difficulty in extending sewer services, because pumping of sewage back to the Canton waste water treatment plant. On the other hand, Buncombe would have little difficulty in extending sewer service into the Corridor (present line is near Candler-about Three (3) miles away), but more difficulty in extending water services. In addition, the high quantity of ground water throughout the Corridor, especially at Turnpike, provides unlimited water supply for commercial and recreational developments.

Cooperative, creative management and planning between Haywood-Buncombe Counties would have mutual economic and environmental benefits.

Climatology: Present known Climatological data for the NHCC watershed are shown in Table-graphs1-2. Most weather parameters have been extrapolated or taken directly from the official Weather Bureau station at Canton (approximately 3 miles away).

The NHCC climate is characterized by a microclimate, within the regional climate, that is primarily determined by the area's topography, aspect, and geographic position in the western North Carolina orographic province. Weather fronts approach primarily from the southwest (Gulf of Mexico) and northwestern directions (continental). Review of National Weather Bureau data shows that western North Carolina has one of the most temperate climates in the coterminous Untied States.

Precipitation: The adjacent Pigeon River Subbasin watershed has 18 mountain peaks along the Haywood County boundary that are over 6,000 ft elevation (1818) meters. Cyclonic storms approaching from the southwest bring warm-moist Gulf air into the region. High rain-fog precipitation is captured by these high promontories. This type orographic position provides Haywood County with highly productive watersheds (Smathers 1982).

The mean annual precipitation increases with elevation for the nearby Balsams and Smokies approximates 9.44 inches/1000 ft.. (78.6 mm/100m) (Pittillo and Smathers 1979). Recent studies suggest that the NHCC has an inverse relationship, i. e. precipitation decreases up slope on the west facing slopes of the Newfound Mountain Range (Smathers 1994). However, during summer and early fall seasons, NHCC may receives a relatively higher precipitation, which is believed to be the result from local convectional storms in the Pigeon and French Broad River Basins. These data and observations show that further research study of NHCC area weather is needed to better understand its microclimate.

As previously pointed out the NHCC watershed is not in the Haywood County Pigeon River Subbasin. Yet, it comes under the influence of the weather pattern described above. Precipitation is much lower in NHCC, especially southeast of Turnpike.

A pattern of low mean annual precipitation extends into Enka and Upper Hominy areas of the French Broad Basin. Long term rain fall records reveal that this general area is one of the driest in NC (mean annual 40 inches), probably attributed to its lee position of the high Balsam Range and high ridgelines of the Newfound Mountain Range.

Because of the above described orographic position, NHCC receives an anomalous distribution and quantity of precipitation. However, historic weather records show that this area can receive unexpected high stormwater run off from Haywood County's North Hominy Creek watershed tributaries, while receiving only moderate rainfall in the valley-cove. The long-term Climatological paramenters of precipitation and air temperature are shown in Table3-Graph and Table4-Graph respectively.

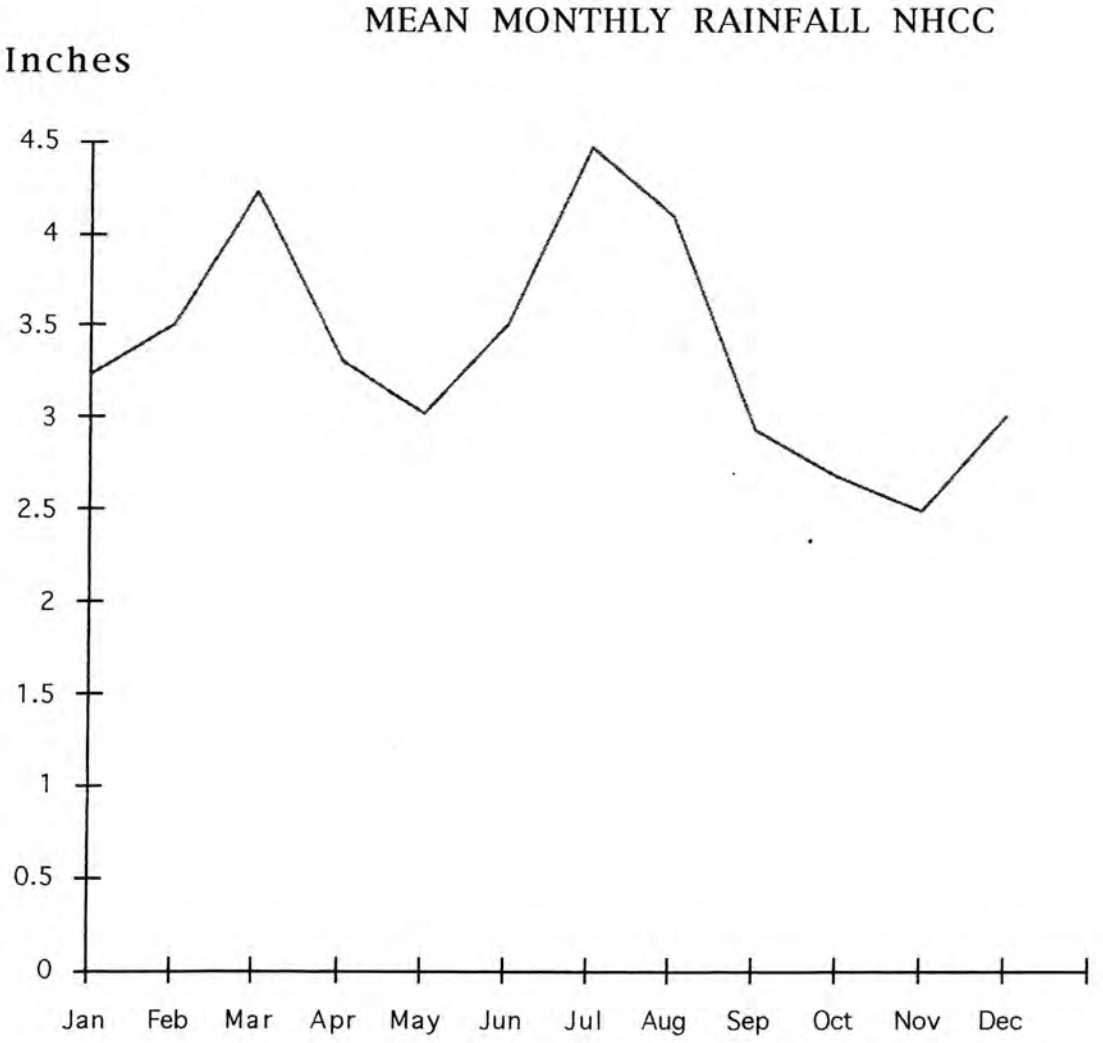
TABLE 3-Graph

MEAN MONTHLY AND ANNUAL RAINFALL
NHCC
(inches)
(TVA 1979)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.24	3.51	4.23	3.30	3.02	3.51	4.46	4.09	2.93	2.67	2.49	3.00

Mean Annual: 40.45

Table 3-Graph



Temperature: Mean annual and monthly temperatures of NHCC and at the Canton Weather Bureau Station are dissimilar to one another, when plotted on an adiabatic topographic model. The 400 feet elevation differences between Hominy Creek Gap and Turnpike, reveals that the latter environment has a slightly higher ambient temperature, which is characterized by a one-two week earlier bud break in vegetation there in early spring. However, during winter, temperatures can periodically be lower in the valley-cove due to cold air drainage from the higher Pigeon River Subbasin. Extrapolated NHCC temperature data are given and graphed in Table 4-Graph.

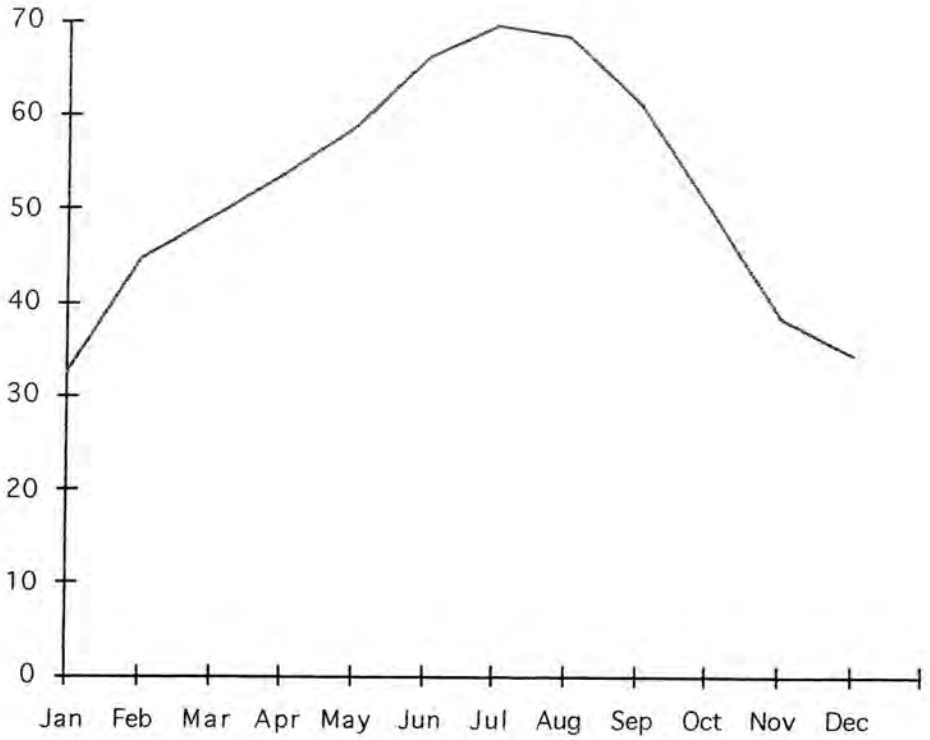
TABLE 4-Graph

MEAN MONTHLY AND ANNUAL TEMPERATURE (F°)
NHCC
(NOAA 1976)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
32.6	44.8	49.1	53.9	58.8	66.3	69.5	68.6	61.5	50.4	38.5	34.4

Mean Annual: 52.4

Table 4-Graph cont.



Atmospheric Pollution: Cold air drains into the valley-cove from high surrounding mountains and the Pigeon River Subbasin. In summer this convection is a blessing, while in winter it produces a cool to cold microclimate.

Throughout the year plumes of polluted air from local and regional industries, high density traffic along I-40 and highway 19 & 23 flow into the area, and from there on into the French Broad River Basin. Studies show that most of this polluted air is coming from coal fired TVA generator plants in Tennessee. Highway traffic and Blue Ridge Paper Company at Canton may be contributing from a third to a fourth of the polluting emissions.

It is not known what effects this atmospheric condition is having on the Corridor environment. However, the deep-narrow-valley-cove has the potential to collect stagnant air (lack of convection), when there is little difference between air temperatures of the high Pigeon River Subbasin and the low French Broad River Basin. Preliminary visual observations, made from Busby Mountain in the French Broad Basin, reveal that in winter cold air drainage moves the pollution plume relatively fast (during morning hours) through NHCC and into

the latter Basin. There it (plume) circulates mostly in a counter-clockwise direction and becoming visually dissipated.

Studies conducted for the past 20 years, at the Great Smoky Mountain National Park, reveal that large amounts of atmospheric pollution is coming from the TVA power plants mentioned above. TVA pollutants have been identified as the major contributors to poor air quality, visibility and acid rainfall in the western North Carolina mountains. One of these pollutants, ozone, often exceeds the national health standards during hot summer months.

OBSERVATIONS AND RECOMMENDATIONS: A better understanding of the NHCC microclimate is necessary for future developments and recreational activities. Predictability of weather episodes resulting from regional and local weather pattern will provide better safety management of potential flooding and hillside avalanching conditions. These data combined with floodplain controls are important in the location and construction of greenway trails, buildings and infrastructure facilities.

Review and engineering evaluations of past landslides along the Southern Railroad, Highway 19 & 23 and Hominy Creek flooding episodes, will be important for locating safe development and recreational sites and activities.

With present worldwide weather data, and its scientific analysis continuing to support increased global warming, we can expect further deterioration of the NHCC air quality in the new millennium-unless more restrictions are placed on regional industrial and auto emissions.

NHCC offers an excellent locality to study and monitor air pollution patterns and movements in the combined Pigeon River and French Broad River Basins. This type knowledge will contribute to a definitive understanding in the management of air pollution through out western North Carolina.

BIOLOGICAL FACTORS

Visits Of Scientists And Travelers: Pristine biological resources of western North Carolina astounded the first white people who visited the area. The forest stands were fabulous and awe inspiring. Recorded accounts of visiting travelers and scientists reveal that

many of these fascinating wilderness characteristics were still present in the late 1800's (Crittenden 1938).

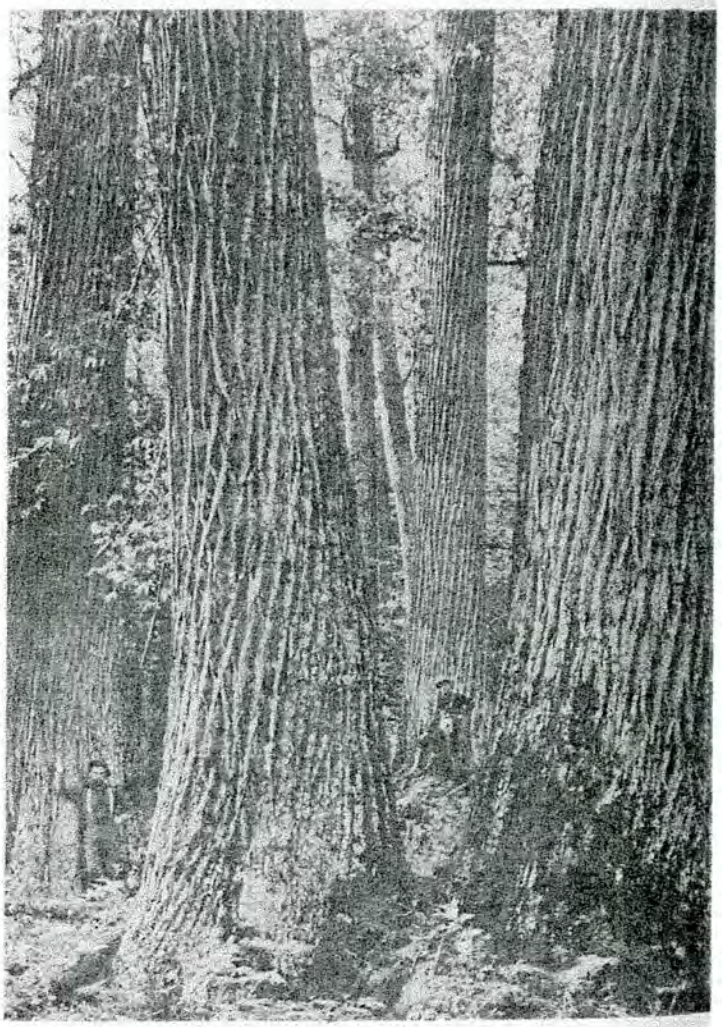
Original Forests: Early explorers and travelers to western North Carolina, especially in the French Broad Basin and the Pigeon Subbasin, were amazed with the diversity and size of native trees. Some visiting scientists reported them as been the most outstanding specimens that they had ever seen (Crittenden 1938, Rankin 1996).

Arnold Guyot: The famous Swiss geographer, Arnold Guyot, while mapping the mountains of western North Carolina in the mid-1800, described the great forests he observed in the Pigeon and French Broad valleys (Avery and Broadman 1938). He states:

"The forest....are truly magnificent. The trees are 80 feet high and upward, and trunks of 8 to 11 feet nay 12 feet in diameter are no great rarity. The Oaks, the Chestnut, the tulip tree (Poplar) ....Magnolia and Hickory compose the bulk of these immense forests."

In her book Trees Of The South, Charlotte Hilton Green states "perhaps the largest of our American chestnuts was the one in Francis Cove, in western North Carolina, which had a diameter of seventeen feet and a height of more than one hundred feet" (Green 1939). Francis Cove is located in the Pigeon River Subbasin of Haywood County near the Town of Waynesville. In 1937, William Coker and Henry Totten, botanists at the University of North Carolina, stated in their book Trees Of The Southeastern States, "The largest chestnut tree now known to be standing is in the Great Smoky Mountain Park three miles from Crestmont, North Carolina. It is said to have a diameter of 10 feet and 7 inches seven feet from the ground. This with the exception of one oak tree in California, is thought to be the largest nut bearing tree in North America" (Coker and Totten 1937). Giant chestnut trees once grew in the rich virgin valley-cove soils of western North Carolina-similar to those that once existed in the NHCC. The size of some of these giants can been seen in Figure 7.

Figure 7. Chestnut Trees In The
Western North Carolina Forests



Giant Chestnut Trees Like These
Once Grew In The Valley-Cove Forests
Of Haywood County
(Mt. Heritage Center, WCU)

William Brewster: William Brewster, a Harvard Ornithologist, described a segment of an ancient virgin forest, still intact that he observed near Black Mountain in 1881 (Rankin 1996):

"The open hardwood forest stretched away as far as the eye could reach.....Everywhere it was densely shaded by the canopy...a hundred feet or more overhead by sturdy shafts of oaks, hickories, chestnuts, tulip trees, beeches, sugar maples, and black walnuts. Many of these trees were six to seven feet in diameter....Their trunks rose perfectly smooth and straight to at least fifty feet before reaching the first branch. I saw some that must have been at least 125 feet high. They....formed the finest forest I have seen east of the Wabash River."

The NHCC valley-cove, before settlement, must have supported an equal-type outstanding virgin forest and wildlife.

While on a trip from Asheville to Webster, on the Western North Carolina Railroad, May 25, 1885, Brewster's train was detained for five hours at Turnpike, because the trestle there was washed away during a flood on Hominy Creek (Simpson 1980). During this time he rambled along the railroad for a mile or more (into the NHCC narrow valley-cove) and made careful notes on plants and birds he saw and heard. He states:

"The locality is a fertile valley along Hominy Creek. The steep hillsides that wall it in were heavily timbered with hardwoods with a dense undergrowth of Rhododendron. Along the edges of these woods black locust, and Rum (Black) Cherry were in full bloom and in places glowing bits of orange, scarlet, and yellow marked the positions of the beautiful (Flame) Azalea (Rhododendron calendulaceum), now in its perfection. Near the trestle a hillside rose almost vertically to five hundred feet or more above the valley presenting the appearance of a solid wall of green foliage. On the crests of the ridges were scattered Pitch Pine in the valley fine apple orchards. Birds were fairly numerous, along the stream (Mockingbirds, Warblers-Dendroica aestiva being the characteristic species, on the hillsides Red-eyed Vireo, Oven Bird, Wood Thrush, etc."

Brewster's descriptions document a period when a large portion of the great virgin forests had been removed in western North Carolina for settlement, agriculture and timber. He was seeing a century later

the secondary forest recovery of the magnificent forest that Rutherford's soldiers saw as they passed through the narrow valley-cove in 1776.

Before European settlers arrive, western NC valleys and gorge-like landforms, later to be referred to as coves and "hollars" by early settlers, were inhabited by a unique, nationally outstanding assemblage of wilderness plants and animals. And as revealed above, travelers and scientists visiting the area in the late 1800's, even after the early settlers had altered the virgin forests, were still amazed at the unique flora and fauna present.

NHCC was a unique animal migratory route between the high Pigeon River Subbasin and the lower-broad French Broad River Basin. The rich highland pasture lands, of what is now Haywood County, would have been very favorable summer range for elk and bison from the lower French Broad Basin. For example, a nearby high gap on Lower Hominy, where highway 105 intersects with the Blue Ridge Parkway was named Elk Pasture, because of Elk range observed by early settlers (Lord 1976).

The natural-highland-pasture-lands, as well as those cleared from the forest by the first settlers, were very productive for raising sheep and cattle. The Chestnut forests provided abundant mast for their hogs. The famous Swiss geographer Arnold Guyot, while surveying Haywood County in 1860, described the County as having the most sheep and cattle of all the counties at that time, apparently because of its numerous highland pastures.

Plant Life: In his description of the natural potential vegetation of this section of western North Carolina, (even though the forest has been removed or altered by man) Kuchler (1964) described the forest cover as an Oak-Hickory-Chestnut dominated forest. With exception of the chestnut devastated by the chestnut blight (Endothia parasitica) , Kuchler contended that all the original climaxed major dominants had the potential to return to their original position, if the man-disturbing factors were removed. However, this type recovery would require seed or other disseminules from a nearby intact segment of the original forest.

In her description of the original forests of the southern Appalachians, Lucy Braum (1950) described the original vegetation of valley-coves, such as NHCC, as a Chestnut-Oak Forest with Stream Communities (Braum 1950)

Dominant trees away from the streams were American Chestnut (Castanea dentata), Red Oak (Quercus rubra), White Oak (Quercus alba), Bitternut Hickory (Carya cordiformis), Pignut Hickory (Carya glabra) and Mockernut Hickory (Carya tomentosa). Those dominating near or alongside streams were Northern Red Oak (Quercus borealis), Red Maple (Acer rubrum), Sweet Birch (Betula lenta), Eastern Hemlock (Tsuga canadensis), Silverbell (Halesia carolina), Yellow Poplar (Liriodendron tulipifera), Black Cherry (Prunus serotina), Umbrella Tree (Magnolia Fraseri), Serviceberry (Amelanchier laevis), and Eastern White Pine (Pinus strobus).

Braum's forgoing forest type would be equivalent to Kuchler's (1964) Appalachian Oak Forest (original codominance with Castania dentata now insignificant due to chestnut blight).

Anthropomorphic Impact On Original Vegetation:

Study of recent aerial photos of the NHCC area reveals long disturbing impacts upon the original vegetation cover through logging, forest removal for pasture, row crops and urban development. Past studies have shown that all of the original virgin forest throughout western North Carolina, except for a few stands found in the Great Smoky Mountain Park and Joyce Kilmer National Forest, was logged up to 5000 feet elevation by the turn of the twentieth century.

The original vegetation cover and soils have undergone sever degradation. Yet, there is a good chance, with the removal of some anthropogenic factors, some areas could returning to a long-term stable vegetation type-quite similar to the original cover. There are a number of the original forest plant species on adjacent ridgelines of the Newfound range to permit this type recovery in the NHCC.

Reports of a few shrub-size American Chestnut (Castanea dentata) clones still exist both within and outside the area, but their aerial stems soon succumb to the introduced fungus (Endothia parasitica). These stems are sprouting from roots of trees that were attacked by the chestnut blight nearly a century ago.

The American Chestnut was a dominant trees in this area, before the first Europeans arrived in western North Carolina. For example the high ridge on the south side of NHCC is called Chestnut Mountain, because the American Chestnut tree grew here once in great abundance. It is shown on the Haywood County Hominy Creek Watershed Map at the end of this report.

Since the blight, chestnut has been replaced by similar life forms such as oak and hickory, and in some localities by red maple.

Some of the original chestnut tree root systems produce clone survivors. These young shoots grow to be small saplings size trees, and store energy in their root system, before they are killed back by the blight. Yet in this short life span, many of the young clones are able to produce fruits (nuts). Thus, there is a possibility, through natural genetic changes, a blight-resistant-mutant seedling my be produce in the future, which may eventually allow the tree in hundreds or thousands of years to return to a dominant position in the Appalachian forests.

Inspection of aerial photos reveal that on ridgelines of the contiguous Newfound Range a SAF Forest Cover Type 57-Yellow Poplar (SAF1975) cover type exists. This vegetation type is often found as a secondary successional forest on old fields and pastures.

Its very likely that on the ridge lines and hillsides that the Yellow Poplar secondary successional sites are dominated in cover and numbers with Yellow Poplar (Liriodendron tulipifera) in association with Black Locust (Robinia pseudoacacia), Red Maple (Acer rubrum), Sweet Birch (Betula lenta), Northern Red Oak (Quercus borealis), Cucumber Tree (Magnolia acuminata), Black Cherry (Prunus serotina), Black Walnut (Juglans nigra), and other mesic site species.

Animal Life: No checklist or inventory has been found for the aquatic and terrestrial animal life of NHCC-with exception of Brewster's 1885 notes cited above. The following species have been observed as residents, frequenting, or potential candidates for ridgelines and summits of the contiguous Newfound Mountain Range

Terrestrial Species

Vertebrates

Mammals: Opossum, Eastern Mole, Least Shrew, Bats (sps.), Black Bear, Raccoon, Weasel, Striped Skunk, Red Fox, Bobcat, Groundhog, Eastern Chipmunk, Eastern Gray Squirrel, Flying Squirrel, Deer Mouse, Vole (sp.), Muskrat, Eastern Cottontail Rabbit, and White-Tailed Deer.

Coyotes have been seen and heard on the nearby ridge lines and summits of the Newfound Mountain Range.

The following species, which would have been in the area prior to European settlement, but that are now extirpated or extinct are: Wood Bison, Wood Elk, Cougar (Panther), and Red Wolf. The once extirpated Beaver is now making a "comeback" in some western North Carolina streams.

Birds: The following avian fauna have been observed on the contiguous ridgelines and summits: Turkey, Ruff Grouse, Bob-White, Red-Tailed Hawk, Cooper's Hawk, Sharp-Shinned Hawk, Sparrow Hawk, Turkey Vulture, Screech Owl, Barn Owl, Barred Owl, Great Horned Owl, Barred Owl, Mourning Dove, Yellow-Shafted Flicker, Downy Woodpecker, Hairy Woodpecker, Sapsucker, Pileated Woodpecker, Wood Pewee, Black-Capped Chickadee, Tufted Titmouse, White-Breasted Nuthatch, Bluebird, Wood Thrush, Olive-Backed Thrush, Robin, Veery, Brown Thrasher, Catbird, Mockingbird. Cedar Waxwing, Carolina Wren, Red-Eyed Vireo, Warblers (sps.), Yellow-Breasted Chat, Starling, Blue Jay, Scarlet Tanager, Purple Finch, Cardinal, Evening Grosbeak, American Goldfinch, Pine Siskin, Indigo Bunting, Towhee, Rose-Breasted Grosbeak, Slate-Colored Junco, Song Sparrow, White-Throated Sparrow, White-Crowned Sparrow, Eastern Phoebe, and Crested Flycatcher.

As listed above, when Harvard Ornithologist, William Brewster. visited NHCC at Turnpike, the bird species he observed or heard are still found in the area with the exception of the Oven Bird and some warblers. However, it not likely that their populations are as dense as they were in 1885.

Numerous species of birds use the area as a "stop over site" during their spring and fall migration along the eastern United States flyway. It's possible that some rare and endangered species of birds momentarily visit NHCC while on migration.

Golden Eagle has been extirpated from the general area because of a loss of habitat. The Eastern Passenger Pigeon, once common to the valley-cove and contiguous Pigeon River Subbasin before European settlement , is now extinct.

Reptiles:

Snakes: Eastern Ring-Necked Snake, Eastern Black Snake, Water Snake, Common Garter Snake, Copperhead, and Timber Rattlesnake. The Timber Rattlesnake is becoming rare in western North Carolina outside the National Parks and Forests lands, because of loss of habitat. They lack the ability to travel long distances to new habitat, when their home range is dissected with logging, housing and roadway developments.

Lizards: Eastern Fence Lizard, and Five-Lined Skink.

Turtles: Eastern Box Turtle, Painted Turtle and Snapping Turtle. These species are becoming scarce, especially the Eastern Box Turtle. It like the Rattlesnake is becoming scarce because of loss of habitat, and that it does not have the ability to travel long distances (over 200 yards) from its home range.

Amphibians:

Toads and Frogs: American Toad, Fowler's Toad, Common Tree Frog, Spring Peeper, and Wood frog.

Salamanders: Eastern Newt (Red Eft), Dusky Salamander, Red-Backed Salamander, Red Salamander, and Purple Salamander.

Invertebrates

Worms and Mollusks: Woodland Snails-several species present-some may be endemic only to the southern Appalachians (P.C. Holt et.al. 1969).

Centipedes/Millipedes: Present, but no study had been made on species population composition and distribution.

Insects and Spiders: Many species present, especially Orb Weavers and Wolf Spiders-no study on species population composition and distribution has been made. Endemic species to Southern Appalachian Mountains may be present. Recent studies made in Great Smoky Mountain Park reveal several new species there.

Aquatic Species

Vertebrates

Fish: The southern strain of the Eastern Brook Trout (*Salvelinous fontinalis*), once common in this section of Hominy Creek, is now nonexistent due to habitat loss through removal of forest cover, siltation, surface and subsurface water pollution. The northern strain of Eastern Brook, which was stocked throughout western North Carolina in the 1930's, has replaced the southern strain, except where migration barriers (waterfalls, etc.) keep the two populations separated. The northern strain has been reported in the far-headwaters of North Hominy Creek near Beaverdam.

Invertebrates

Mollusks: No study had been done.

Insects: It is presumed that populations of benthic organisms are present in the higher-elevation sections of Hominy Creek, because of less pollution there. These organisms are needed for fish food, and their presence indicates a higher quality water. However, no study of the aquatic fauna of the upper Hominy Creek has been done. The following benthic organisms indicate a high quality water supply and trout habitat: Mayfly and Stonefly nymphs and Caddisfly larvae.

Crayfish: Present, but no study done on population density and distribution. Five species have been recorded in a preliminary study of the southern Appalachian region (Holt et.al. 1969).

OBSERVATIONS AND RECOMMENDATIONS: Most of the NHCC native vegetation can be restored through seeding and planting-back indigenous trees and shrubs. All of the original species listed above can be found in nearby natural forest stands and commercial nurseries.

Much research has been undertaken to help reestablish the american chestnut. The latest and most promising effort was the establishment of the American Chestnut Foundation in 1983. In 1998 an office was opened in Asheville. The Foundation is breeding new generations of the american chestnut with a highly blight-resistant chinese chestnut in hopes that the blight-resistance will transfer. Outplantings of the crossed seedlings are being undertaking in a few selected forest stands in western North Carolina. Only one (1) in sixteen (16) of the new trees is expected to be blight resistant. These survivors will be used as parent trees to backcross more blight-resistant offspring.

There is a good chance for a cooperative program with the American Chestnut Foundation to get outplantings of blight-resistant seedlings established on an NHCC Greenway Trail. The Foundation's office is located at 46 Haywood Street, Suite 213 Haywood Park Office Building, Asheville, North Carolina.

Ability for the natural forest to return is revealed everywhere in the NHCC. Exposed mineral soil is soon invaded by Yellow Poplar, Black Locust. Rhododendron, Mountain Laurel and a variety of herbaceous plants. If these sites are not disturbed, soon Oak, Hickory, Maple, Dogwood, Virginia Pine and White Pine invade, and the plant successional trend is established for recovery of the original native vegetation cover-with the exception of Chestnut trees.

The foregoing described plantations can be readily established in developing a Greenway Educational-Recreational Trail system along Hominy Creek. Here the story of the historic virgin forest, and the first European people who saw it, can be revealed in its historic perspective. Included in this type interpretation would be the story of the great game animals such as Bison and Elk that used the NHCC trail in their migration between the French Broad and Pigeon River valleys.

Historic documentation reveals that NHCC, before the coming of white man, was a pristine biological wilderness, with outstanding plant and animal life-many native species now extinct or extirpated. No more does the woodland Bison, Elk, Panther (Painter) Red Wolf or Wild Pigeons pass this way. Their habitats have been replaced with urbanization and agricultural developments.

The Cherokee were the first humans, and their paleo ancestors 8000-10000 years before them, to visit or live in the area. These people hunted and fished along the Pigeon and French Broad Rivers and their tributaries. The NHCC was their main passage-transportation link between the two large river basins.

Establishment of a Greenway Educational-Interpretive Trail along Hominy Creek, replacement of septic tank systems in the urban areas with sewer and water lines and stormwater controls and other nonpoint pollution controls, would make the Corridor a desirable place to visit by both residents and tourists to the area.

Restoration of native vegetation along the Greenway would provide habitat for native wildlife. Some plant and animal species would naturally recolonize from contiguous ecosystems, while others may have to be reestablished by man. The northern strain of the Eastern Brook Trout could be restocked, once Hominy Creek water quality is restored.

With well planned interpretive facilities, the Greenway Educational-Interpretive Trail would become an outstanding educational site. It would tell and exhibit the prehistoric and historic Indian and European settlement story, and their ecological relationships with the natural history of the Corridor. This type of development would attract educational institution-groups and tourists to the area, through highway 19 & 23 and 1-40 interstate transportation systems. Also, it has the potential to become a part of the Greenway Trail system already established along the Pigeon river in Canton (Smathers 1992).

SOCIAL FACTORS

Precolumbian History:

Paleo-Indians: Archeological investigations in the Pigeon Subbasin at Garden Creek 1880,1915 and1965-67-near Canton- and

in the French Broad River Basin near Warren Wilson College 1966-68, reveal that paleo-indians (clovis) inhabited the river valleys between 8000-10000 years ago. NHCC would have been a travel route for these early people. They probably inhabitated or utilized it in a special manner, because of its vital position as a transportation link between the interconnected human-populations, and as a game animal migratory route. These were the first humans to the area. They were the ancestors of the present Cherokee (Keel 1976, King 1982, Ward and Davis 1999).

American Indians: The Cherokee Indians dominated the western North Carolina region when Europeans arrived. Antropologists believed they battled the Shawnee for the French Broad River Basin area in the mid-1700's (Neufeld 1999). The Pigeon and French Broad River Watershed were their hunting grounds, which included the present NHCC area.

The Catawabas Indian lands were east of the Cherokee, and historians tell us that these two tribes often warred with one another along the Blue Ridge Mountain divide. European settlements east of the Blue Ridge (Swannanoa Gap) were accepted by the Catawabas, and they often sided with the white man against the Cherokee. The Cherokee were often unfriendly to the white intruders. For example, in 1784, when the first settler Samuel Davidson crossed over the Blue Ridge and built his cabin on the Bee Tree branch of the Swannanoa River, he was killed by Cherokee Indians (Sondley1930).

Postcolumbian History:

The First European Visitors. The first white man to visit western North Carolina was Hernando De. Soto in 1540 seeking gold. There is no record of his army visiting the NHCC or adjacent areas.. It's very likely that a few white hunters, trappers or tradesmen from the upper Piedmont settlements used the Corridor occasionally, but this would have been a dangerous venture not known how the Cherokee Indians would react.

No records have been found of European visitors using NHCC before the Rutherford Expedition in 1776. Its not impossible that James Needham's expedition into western North Carolina in 1673, to establish trade relations between the Englishmen and Indians, may have passed through NHCC. It's rather remote that famous naturalists such as John Bartram (1765) and William Bartram (1776) would

have ventured into the area. However, Neufeld (1999) states in his research that William Bartram visited the area of what is now the city of Asheville in 1776. John Bartram found the Indians to be "jealous of white people - especially if they should be peeping in amongst the rocks or digging up their earth." He also described Indian graves in the area where the present Kress building stands in downtown Asheville.

Revolutionary War: In September1776, General Griffith Rutherford left from a frontier fort, at the eastern foot of the Blue Ridge, with a great army of 2400 soldiers to fight the Cherokee Indians in their interior mountain valley towns. The Cherokee were to be punished for having attacked some of the far western settlements.

Historic accounts (Allen 1935, Arthur 1914, Hamilton 1940, Ganyard 1968, Ashe 1904) record that Rutherford and his army started from the frontier fort at the present Town of Old Fort. After crossing the Blue Ridge at Swannanoa Gap, the great army followed the Swannanoa river to the French Broad River, crossing it at Mud Creek. From there it followed the Hominy Creek through a gap in the Newfound Mountain Range (which is now the present Haywood-Buncombe County line at Turnpike). Following the North Hominy Creek, the army entered the narrow gorge-valley-cove (NHCC) and up and over the Hominy Creek Gap into the Pigeon River Subbasin at what is now Canton. From there Rutherford proceeded up the Pigeon River valley crossing the Pigeon at Old Ford Of The Pigeon (Levine 1980), on through the valley and crossing a high side-ridge of the Balsam Mountain Range (now called Pigeon Gap -present highway 276 route) east of Waynesville, and from there on across Balsam Gap (where present Blue Ridge Parkway crosses 19 & 23) into the Tuckasegee River valley, and then across Cowee Gap into the Little Tennessee River Valley. The great army destroyed the Cherokee town of Stecoee with fire along with some 35 other Indian towns.

Crossing the mountainous wilderness was a great undertaking for 2400 soldiers with supplies and equipment. It was an arduous journey through the wilderness, where only a few explorers had ventured before. There was the impending possibility of being discovered and ambushed by the Indians. Yet, in all this danger and hardship, they were surrounded by the magnificent virgin forests, pristine rivers and streams, wildlife and impressive scenery.

In 1954, the NC State Department of Archives and History placed Highway Historic Markers along the Rutherford Trace in Buncombe, Haywood, Jackson and Macon Counties. One of these Iron Monuments was place along side Highway 19 & 23 in the NHCC. The present location and condition of these Marker is given in Appendix 4.

Captain William Moore of the Expedition called it the "Land of Eden" and "Promised Land" (Neufeld 1999). James Hall, a minister with the expedition gazed upon one of the spectacular promontories, where the Great Balsam Range connects to the Newfound Range, and called it Mount Pisgah after the Mt. Pisgah in the Bible (Lord 1976).

These soldiers saw and experience a wild and beautiful wilderness on the edge of the frontier, where one could start a new life. Many of the soldiers that took part in this campaign came back to the Pigeon and French Broad Basins to take up land. They were granted parcels of land by the state of North Carolina for serving in the Revolutionary War (Arthur 1914).

Captain William Moore, brother-in law of General Rutherford-who took part in the expedition-returned in 1777 to live in the area . He was granted 640 acres (one square mile) of land along Hominy Creek and made his home in the wilderness near what is now the old sandhill school (Medford 1963) (Arthur 1914). Thus, NHCC is a vital link in the history of the early settlement of western North Carolina.

Opening The Wilderness, The First Transportation Routes: The Rutherford expedition had shown the way for westward travel from the Blue Ridge Mountain divide through the near-impassable interior western North Carolina mountainous terrain. Its very likely that Rutherford had prior information from hunters, Indians and exploration accounts in guiding his army through this uncharted terrain.

Once the Indian lands were opened for settlement in 1785, settlers poured over the Blue Ridge through the Hickory Nut and Swannanoa Gaps. Once into the French Broad Basin most of the migrants followed down the Swannanoa River to the French Broad River. From there they crossed the French Board and up Hominy Creek through the Newfound Mountain gap at the present Turnpike, and from there through NHCC passing over Hominy Creek Gap into the Pigeon River Basin, at what is now the present Town of Canton. Moving across the wild and beautiful forested Pigeon River valley, they crossed the

rugged Balsam Mountain Range at Balsam Gap, and from there it was down hill through winding coves into the Tuckasegee valley, and then on to the Oconaluftee River and Great Smokies. Some moved on from the Tuckasegee into the Hiwassee Basin joining up with much earlier established settlements in Georgia.

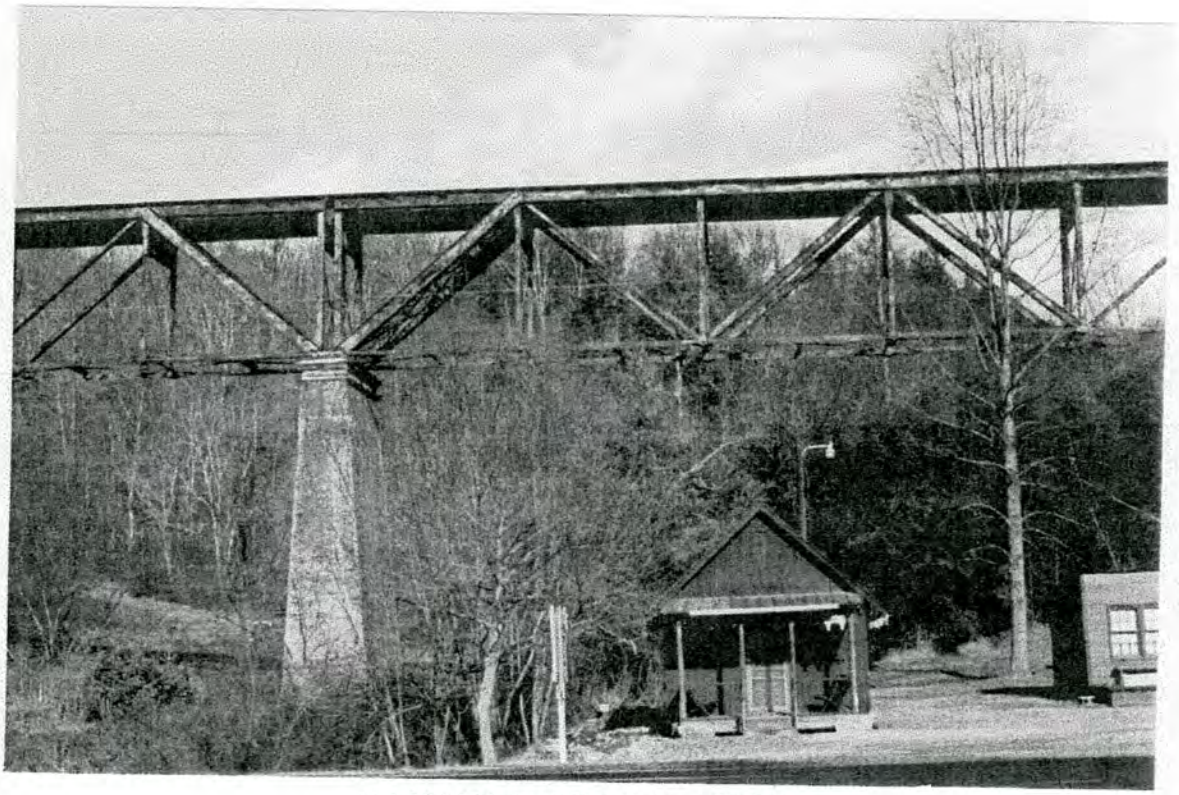
From 1848-49, the North Carolina Legislature pass legislation to provide a Turnpike Road from Salisbury to the Georgia state line. This land of the Cherokee was pledged for building a "Western Turnpike." From Asheville a western route through what is now the counties of Haywood, Jackson, Macon and Cherokee was completed in 1849 (Arthur 1914).

The First Railroad: Guyot in his survey of the mountainous system in western North Carolina in 1860 reported that a railroad was being contemplated across the high mountain region. He states, "I found the parties of engineers busy in finishing it (railway survey) under the direction of Chief Engineer Jas C. Turner." He states further that the railroad "is perfectly practical, and that if it is ever made, will reach at the Balsam Gap, a higher elevation than any railroad now existing in the United States" (Avery and Broadman 1938).

Following parts of the old Turnpike road in Buncombe, the Western North Carolina Railroad reached Asheville in 1880. By 1882 it was built from Asheville to Turnpike and from there up the NHCC into Pigeon Ford (Canton). By 1883 the railway was running to Waynesville, and work was underway to extent the line to Murphy (Medford 1963).

Again the NHCC provided the major rail transportation route westward from Asheville. The rugged Newfound Mountain Range and Hominy Creek Gap challenged the best railway construction engineering at the time. To provided the low percentage grade of the railway bed from Turnpike, up the narrow North Hominy Creek valley gorge, and then through Hominy Creek Gap into Pigeon Ford, required considerable cut and fill along the steep mountain sides. When this short stretch of track was finished in 1882, it boasted the highest trestle and deepest cut in North America (Watts 1993). However Levine ((1980) recorded these superlatives as being the highest and deepest in the South. The present day high trestle is shown in Figure 8.

Figure 8. Southern Railway Trestle Over
North Hominy Creek In ETJ 1999



In 1881 This Was The Highest Railway
Trestle In The Southern United States

In any event, these superlatives characterize a master undertaking of railway construction in mountainous areas of that time (early 1880's) in the United States. It was only thirteen (13) years before, in 1869, that the transcontinental between the east and west coast of the United States was completed at Ogden, Utah. Its seems reasonable to assume that the early construction of a railroad through the rugged western North Carolina mountains, was part of the applied knowledge acquired in constructing the transcontinental railroad across the high passes and gorges of the western mountains.

The coming of the railroad open the mountain wilderness for settlement, resource extractions of timber, minerals and agricultural goods, and the tourist industry. The old Turnpike Road would now become subordinate, at least for awhile, in moving heavy cargo and people across the mountainous region. Here again the NHCC, because of its topographic and geographic features, played an important role in the settlement and economic development of the interior mountain region.

An Outstanding State And National Historic District: The east gateway to NHCC was soon to become a major historic site in the history of western North Carolina. Just over the Buncombe County Line, at the gateway, the small community of Turnpike developed. It received this name, because of its location as the first tollgate west of Asheville, which was on the old Turnpike Road between Asheville and Murphy. As previously mentioned, a stage coach line served this route until the coming of the railroad.

The First Settlers: The first settler to the area, who owned most all the NHCC, was George Smathers. He was one of the five sons of Joahann Smetter (John Smathers) and his wife Mary Agner. They were early settlers of German ancestry that moved from Rowan County to Haywood County, settling in the Dutch Cove section circa 1800. The name Smetter was anglicized to the Welsh name-Smathers (Patton 1954). George Smathers had his home near the present high railway trestle site. He owned part of the Turnpike roadway in the NHCC, which was the shortest way from Waynesville and Greenville, Tennessee-where western North Carolina farmers took their produce to market (Levine 1980).

George turned his section of NHCC into a toll road and the proceeds were used to maintain the road. He called the area near the Haywood-Buncombe line the Bottle Neck, later called Turnpike. There

was so much traffic through the Bottle Neck, that he opened a general store to save people the expense of going to Tennessee (Levine 1980).

His older son, John Charles Smathers born near Canton in 1826, was in business first in Waynesville. However, he later moved to Turnpike, where his father gave him acreage along the Buncombe-Haywood line, including the Bottle Neck. Levine (1980) states that "he was given enough lumber to build a house, general store. grist mill and blacksmith shop. He later went by the names J.C., Col. John or Turnpike John. He is remembered more by the latter name in western North Carolina history. The eastern gateway into NHCC including Turnpike vicinity and Bottle Neck are shown in Figure 9.

An Early Pioneer: In the early 1860's Turnpike John opened a hotel-tavern to accommodate the stage coach passengers. With the coming of the Western Carolina Railroad in 1882, Smathers enlarged his building and served meals to railway passengers. In addition he took in summer tourists, operated a store and farm, accommodated drovers and their livestock, and operated a post office (Powell 1976).

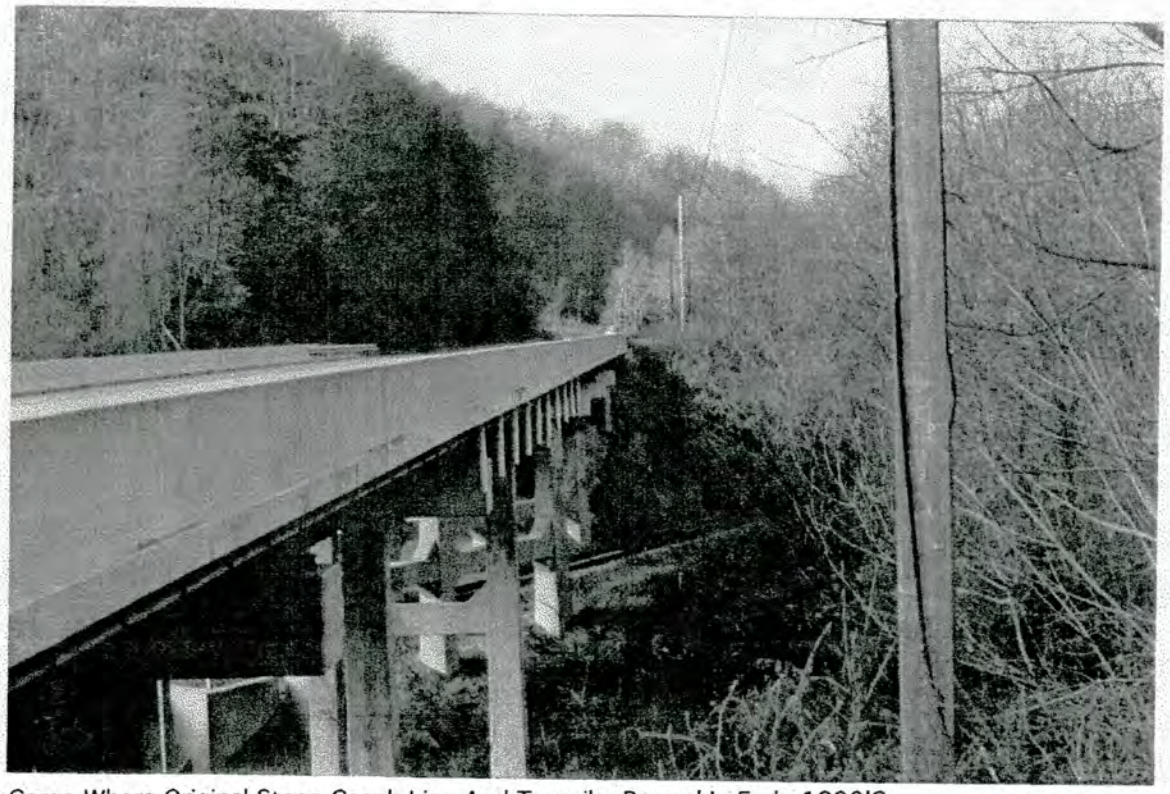
Historian J. P. Arthur (1914) described John C. Smathers as a man that typified the hardy and resourceful pioneers of western North Carolina in the 19th Century. Judge Frank Smathers (Smathers 1956), a grandson, captures some of the early history of the Turnpike Hotel operations and his grandfather and grandmothers pioneer life in his book, The Last Pioneer Of Western North Carolina.

"Turnpike John" caught the attention of travelers and historian at the time as an example of the hardy, resourceful individuals that were required to survive and make a life in the rugged mountain wilderness during the nineteenth century.

A more detailed profile of John C. Smathers is given in W.C. Medford's book (1963) Mountain People Mountain Times, see Appendix 5.

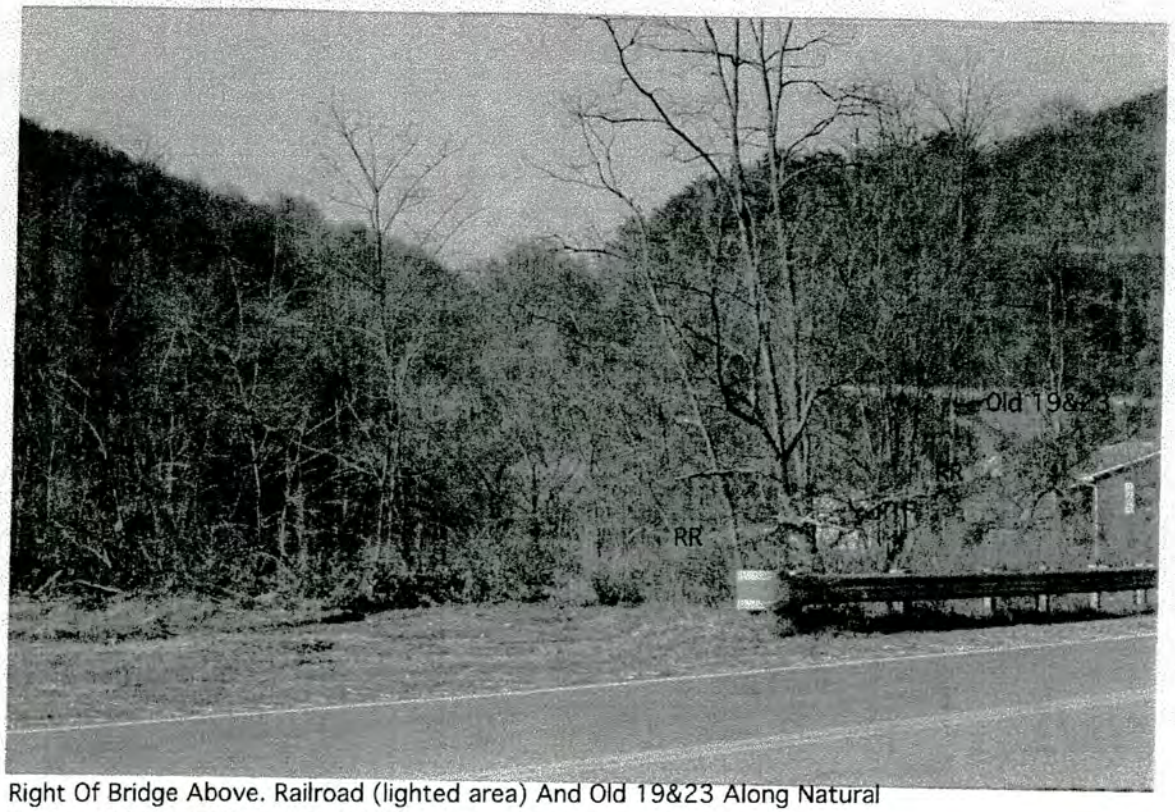
Civil War Period 1861-65: There are no specific civil war records such as battles, skirmishes and encampments within the NHCC Corridor . However, this area would have been of strategic importance for military operations. Guyot had reported earlier in 1863 to the Federal Government the importance of the mountainous

Figure 9.Looking West. Highway 19&23 Cuts Through NHCC Gorge Ridgeline At Haywood-Buncombe Line. Note: Railroad Beneath Bridge Along Original Gorge Route and Hominy Creek.



Gorge Where Original Stage Coach Line And Turnpike Passed In Early 1800'S.

Early Settlers Referred To This Site As "The Bottle Neck".



Right Of Bridge Above. Railroad (lighted area) And Old 19&23 Along Natural Contour Of Gorge West Into NHCC.

terrain during war time-especially the narrow gorges and gaps that permitted passage from one basin to another (Avery and Broadman 1938). It was an important transportation link with the Buncombe Turnpike for movements of any military supplies, personnel and military battles and campaigns in the inter-mountainous region. It must have been used by both the Union and Confederacy, especially during encounters and skirmishes in Haywood and Buncombe Counties. Arthur (1914) mentions that the old turnpike route was capture by Colonel G.W. Kirk in 1866 sic 1865.

OBSERVATIONS AND RECOMMENDATIONS: Unfortunately, probably because of inadequate research, the 1998 Buncombe County Land Use Plan lacks information on that County's outstanding historic site at Turnpike, and its heritage interconnection and interdependencies with the NHCC. Also, Haywood County has been lax in its research, interpretation and protection of this important site. For example, as previously pointed out, a NC Highway Historic Marker, originally placed beside highway 19 & 23 in the NHCC in 1954, has been missing since 1976. Efforts to find what became of the iron monument have been in vain. In addition the Corridor had become filled with unsightly and dilapidated storage buildings, scattered mobile home parks, unkempt shops and general urban sprawl.

Like a diamond in the rough, the NHCC outstanding state and national historic significance has laid dormant for over a hundred years. From the preliminary information given in this report, the area has the potential to become a regional, state and national outstanding Historic-Corridor site. Canton, Haywood and Buncombe County Official must form a cooperative management plan for the area. Not only would this effort save and reveal an outstanding historic and natural heritage, but it would bring great economic benefits to both Counties.

The Corridor has the potential to become an ideal Regional Information Center, easily accessed from I-40 and 19 & 23. Here visitors could be introduced to what and see and do in western North Carolina. In providing these services the Center would be cooperatively coordinated with various regional tourist industries and chambers of commerce.

A diligent effort should be made to restore the missing Rutherford Trace Marker in the NHCC. Also other historic markers, interpretive devices and facilities should be placed in the Corridor pointing out:

(1) The Historic Railroad Trestle and Deep Cut; (2) The "Bottle Neck"; (3) The Turnpike Inn; and (4) Hominy Creek Gap at Canton named by Arnold Guyot. The North Carolina Highway Historic Marker Committee provides funds and assistance to communities in placement of historic markers.

The Town of Canton and Haywood County should move forward on this important project. Such an effort would be an integral part of a Master Plan to Develop the NHCC for protecting and interpreting an outstanding historic heritage, and providing use of its outstanding recreational and educational features.

ECONOMIC FACTORS

Demography: The demography of western North Carolina is in a dynamic state of change. The population is becoming larger and older at a greater rate than most parts of the United States. It is one of the most popular states for retirement and quality of life.

General Overview: Approximately 75% of the nations population is within a day's drive of Canton or Asheville.

Buncombe's growth rate is expected to increase 8.48% between 2000-2010.

Of the 6621 daily commuters to Buncombe County, 2744 are from Haywood, making it the highest number of commuters of any county in western North Carolina. Practically all of these commuters use I-40 and 19 & 23 in the NHCC.

These commuting figures prove a trend that had been suspected all along, Haywood County -especially east Haywood-is becoming the "bedroom for Buncombe County." These data also shows the high potential of NHCC for low rent housing developments and related urban support businesses and services.

Retirees: The retired populations of Buncombe and Haywood are increasing. The following data shows a definite projected increase in that segment of the population of people 65 years old or older from 1998 to year 2020;

County	1998	2020 projected
Buncombe	32024	50287
Haywood	10756	16789

Statistics prove that retirees who have the money to retire where they wish are coming to North Carolina. North Carolina is the third most desirable state to retire-Florida is first and Arizona second. However, North Carolina retirees tend to stay put in the state for their life time.

They are coming and staying in western North Carolina, because of the temperate climate-summers are not too hot, and winters are not too cold. The mean annual temperature for Canton is 53° F.

Retirees say they want to spent their retirement years here, because of moderate housing costs, natural beauty of the mountains, cultural centers and educational opportunities. These people not only increase jobs in the local services and business industries, but being relatively well off they contribute, volunteer and participate in various community activities. They are often very interested in the local history and cultural arts of the area.

Recreation: A golf course-housing development is underway at Turnpike, and a Motorsports Park is being developed at Chestnut Mountain.

Golf Course: A 620-acre development straddling the Haywood-Buncombe line at Turnpike with 213 acres in Haywood and 407 in Buncombe. 120 home lots around golf course are now available. Project under The Fort Meyers Limited Partnership-telephone 828-926-3848. A clubhouse furnished and interpreted with many of the John C. Smathers' Turnpike Inn memrobelia is planned.

Race Track: Since early 1999, efforts have been underway to develop a Motorsports Park, with a race track built to NASCAR standards in a high-cove on Chestnut Mountain. The facility is separated and not visible from the NHCC valley floor. However, it will be accessed from highway 19 & 23. It will have a direct transportation and commercial impact on the Corridor.

Mr. Steve Westmorland, owner of the Chestnut Mountain property, will develop and operate a 0.53-mile oval track with a quarter-mile drag strip. The facility will seat 7, 700 fans. This property is outside of Canton Town limits. All construction-permitting authority rests with the Haywood County Commissioners.

During initial proposed stages of the Motorsports Park facility, contiguous and adjacent landowners and residents were mixed in their reactions as to environment impact. Most opposition to the racetrack was the noise it would produce, which would have a potential to destroy the rural solitude of the area, and in turn lower the real estate values. Others saw the facility boosting the local economies, providing a much desired recreation and cleaning up of the ragged urban sprawl in the Corridor.

The new Canton Mayor elect, Patrick Smathers, and his Board of Aldermen, support the Motorsport Park. They see it as an economic asset to Canton. It has been proposed that Canton annex the property and provide infrastructures of water and sewer to the site. Recently, Mayor Smathers called together both supporters and opponents to the Motor Sports Park to discuss their difference. It is hoped that future public meeting such as this can help resolve difference between the two groups.

As stated above, the question of Canton annexing the property has been proposed, but there are several obstacles to over come. For example, under NC state law it would take two (2) years to annex the property. In addition the amount of annexed property can be no more than 250 acres, and be no further from the Town limits than three (3) miles.

Economic Impact Study: In May 1999, the Western Carolina University (WCU) Resource Center did an economic impact study of the proposed Chestnut Mountain Motorsport Racetrack as a NASCAR short track. A detailed copy of this study is given in Appendix 7.

Housing Developments: The upper part of the NHCC-near foot of Canton Hill-and the area around the Haywood-Buncombe County line- provide suitable hillside terraced land for apartment-housing-complex developments. These sites would help provide excellent accommodations for commuting workers between the two (2) counties.

OBSERVATIONS AND RECOMMENDATIONS: As the WCU Economic Study pointed out, it will be imperative that both Haywood and Buncombe Counties share in the economic impact of developments in NHCC. This will require the best socio-eco-political skills and commitments of elected and appointed county and municipal officials of both Counties. Imaginative leadership and management will be a necessity. The Councils Of Governments serving both Counties must be called on to help plan and guide the success of any of the foregoing proposed developments and operations.

LANDUSE PLANNING AND DEVELOPMENT:

Buncombe County Initiative: On September 18, 1997, Buncombe County released its First Phase Of A County Wide Comprehensive Land Use Plan, and the final Fourth Phase on August 11, 1998 (BCPD 1998). In the spring of 1999, the Board of Commissioners released a Draft Buncombe County Zoning Ordinance, with three (3) of the five (5) Commissioners supporting the Ordinance, which assured its adoption (BCPD 1999).

Buncombe Under Zoning Ordinance in 2000: Because of county-wide organized opposition to the Land Use Plan and Zoning Ordinance, County Commissioners agreed to a November 1999, referendum vote. The Zoning Ordinance did not pass, but not by a large majority vote. Under North Carolina statutes, although the November vote did not support the Zoning Ordinance, the Commissioners do not have to abide by it. However, in being fair with the public, the Commissioners held meetings throughout the county during the summer and fall of 1999, allowing citizens to express their viewpoints on the Ordinance.

Buncombe's Quality of Life In Danger: The foregoing Plan and Ordinance address the explosive increase in population growth of Buncombe County, and the demand this phenomenon is placing upon the natural and cultural resources and infrastructures of the county. The majority of Commissioners believe that the quality of life in

Buncombe County is fast diminishing, because of uncontrolled, devastating environmental impacts on air and water quality; loss of historic and scenic resources; accelerated soil erosion and loss of natural and cultural heritage. They contend that the County's economic growth and tourist attractiveness will deteriorate in the first half of the 21 St. century if protective measure are not underway by the year 2000.

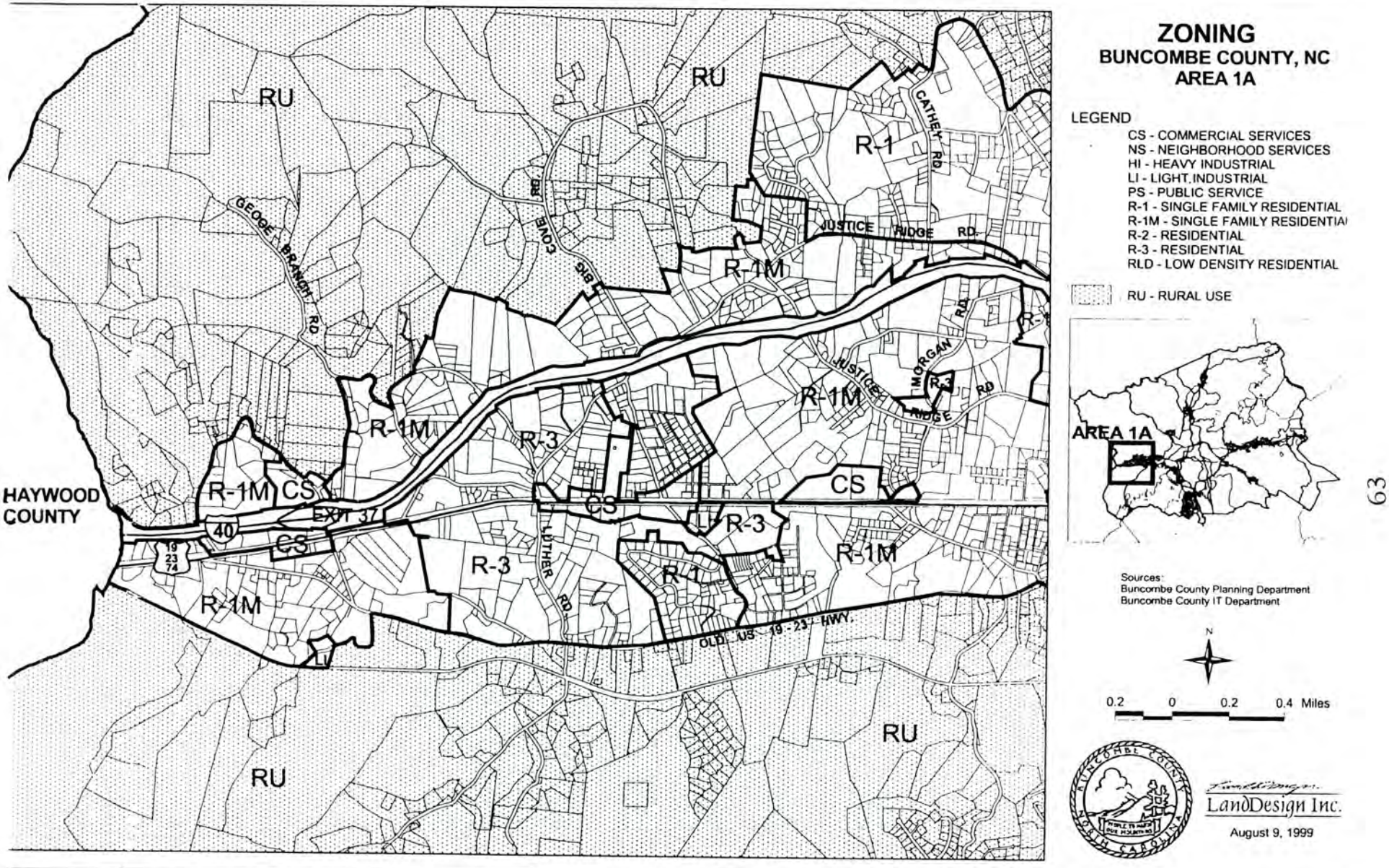
Buncombe Must Form Alliances With Neighboring Counties: County officials are very much aware of how the foregoing described impacts are spreading into neighboring counties, especially the fast growing Henderson and Haywood counties. They are also conscious that alliances and cooperative agreements must be made with the adjacent counties in areas of mutual benefits by sharing natural and economic resources.

For example, in this decade Buncombe needed an additional drinking water supply to support its increasing population. It was leaning toward tapping the North Hominy Creek Watershed in Haywood County-much to the dismay of Canton. Eventually Buncombe made a mutual sewer and drinking water exchange with Henderson County. Both Counties came out as winners-Buncombe will take Hedersonville sewage and Henderson will supply additional drinking water to Buncombe.

This swap will satisfy Asheville-Bincombe drinking water needs of 5 MGD, and the new plant on Mills River can be expanded to 20 MGD. Should future weather conditions of the southern Appalachians create a dryer and warmer southeastern United States, as some climatologists believe, where else will Buncombe look for additional drinking water for an expanding population that will continue into the mid-21st. century?

Potential Alliances With Haywood: In the Buncombe Land Use Plan, county planners have selected Turnpike and its nearby Haywood-Buncombe boundary as a site for future urban growth and development systems (see Figure 10). Canton is listed in the Asheville 20-mile Metro Urban Ring. Here is the main connecting artery for east and west transportation in and out of both counties (I-40, highway 19 & 23, Southern Railway), and the vital link for utility infrastructures such as water, sewer and electrical power.

Figure 10


ZONING
BUNCOMBE COUNTY, NC
AREA 1A
LEGEND
CS - COMMERCIAL SERVICES
NS - NEIGHBORHOOD SERVICES
HI - HEAVY INDUSTRIAL
LI - LIGHT INDUSTRIAL
PS - PUBLIC SERVICE
R-1 - SINGLE FAMILY RESIDENTIAL
R-1M - SINGLE FAMILY RESIDENTIAL
R-2 - RESIDENTIAL
R-3 - RESIDENTIAL
RLD - LOW DENSITY RESIDENTIAL
RU - RURAL USE
AREA 1A
Sources:
Buncombe County Planning Department
Buncombe County IT Department
N
0.2 0 0.2 0.4 Miles
LandDesign Inc.
August 9, 1999
HAYWOOD COUNTY
RU
R-1
R-1M
R-3
CS
LI
GEOGE BRANCH RD.
BIG COVE RD.
CATHEY RD.
JUSTICE RIDGE RD.
MORGAN RD.
EXIT 37
LUTHER RD.
OLD US 19-23 HWY.
40
19
23
74

For example, as pointed out previously, the Plan describes and exhibits a Water Infrastructure Map showing that eastern Haywood (Canton) is a water service area that has a potential to connect NHCC with Buncombe as a future drinking water source. A Sewer Infrastructure Map in the Plan shows that western Buncombe has a sewer service approximately five (5) miles from the NHCC.

It has been pointed out several times before that the Turnpike area and NHCC share an outstanding natural-cultural heritage. simultaneously, they share the main transportation routes into the interior mountain region, and the western North Carolina Regional Tourism Heritage-Trail systems.

Roadway return-loops from I-40 with highways 215, 19& 23, 105 and the Blue Ridge Parkway would provide visitors access to businesses, educational and recreational opportunities throughout Asheville, Canton , Clyde and Waynesville areas.

Demography: Haywood-Buncombe Counties share a present and future population growth pattern. It will require creative management planning to meet the needs of this expanding population-especially for the large number of elder citizens. A brief review of the Haywood-Buncombe Demography is given in Table 5.

TABLE 5. Demographic Data Pertinent To Development Of NHCC For Haywood And Buncombe Counties Cooperative Planning (NC State Office For Planning)

	Buncombe	Haywood
Population:		
Total 1995	188,736	49,9646
(&) Living In Municipalities	83,248 (44.1)	14,744 (29.5)
% Growth 1970-1995	30.14	19.75
Median Age/(%) Change 1986-1996	35.46 38.66 (9.02)	37.96 42.50 (11.96)

Table 5 Continued

	Buncombe	Haywood
Size: Sq. Mi. & Density (persons/sq. mi.)		
1995	656.16 (287.64)	553.93 (90.17)
Projected Population 2000-2020 (%)	200,910 - 233,706 (16.34)	52,062 - 54,033 (3.79)
Per Capita Income: (%) Change 1991-1994	$17,521 - 20,202 (15.30)	$15,101 - 16,973 (12.40)

	Asheville	Canton
(%)Change In Municipal Pop. 1990 1995	61,855 - 68,474 (10.70)	3790 - 3727 (-1.66)

OBSERVATIONS AND RECOMMENDATIONS: Buncombe County has taken the lead in landuse planning, development and county wide zoning. Haywood is far behind in this initiative. Yet the two counties have contiguous boundaries in the NHCC area-and they share the same environmental impacts good or bad-so does Canton.

Canton stands to share and participate in the Buncombe Initiative, because of its connection to Buncombe through the NHCC. Although Canton has extended its ETJ into the NHCC, it still does not have the socio-eco-political connection to fully take part in the economic growth as described in the WCU Economic Study cited above. The same can be said for Buncombe County.

It is now time for Canton and Buncombe Official to start developing alliances to fulfill the above needs. Canton may well begin to explore the possibility of annexing part, if not the whole NHCC. In doing so this would bring together both governments' planning staffs with assistance from state, county and federal agencies in preparing a master plan to develop and operate the Corridor for mutual benefits. Canton Officials might consider this their legacy as they move the Town into the new millennium.

REFERENCE LIST

Abramovitz, J. N. 1999. Unnatural disasters. World•Watch, July/August. pages 30-36.

Allen, W.C. 1935. The Annuals of Haywood County North Carolina. Reprint 1977. The Reprint Company, Publishers, Spartanburg, South Carolina. 714 p

Allison, J. B. et. al. 1997. Soil survey of Haywood County area, North Carolina. U.S. Department of Agriculture and Natural Resources Conservation Service. National Cooperative Soil Survey. Waynesville, NC.

Arthur, J. P. 1914. Western North Carolina a history. Edward and Broughton Printing Co., Asheville, NC. 709 p

Ashe, S.A.1904. "Rutherford's Expedition Against The Indians. 1776," North Carolina Booklet (December 1904): 3-28

Avery M. H, and K. S. Broadman 1938. Arnold Guyot's Notes On The Geography Of The Mountain District Of Western North Carolina. In: The North Carolina Historical Review Vol. XV (3). North Carolina Historical Commission, Raleigh, NC.

Braum, E. L. 1950. Deciduous forests of eastern North America. The Blakiston Company. 596 p

Buncombe County, North Carolina, Planning Dept. (BCPD)1998. Buncombe County Comprehensive Land Use Plan. Land Design, Inc. 1701 East Blvd., Charlotte, NC 28203

Buncombe County Board Of Commissioners (BCBC) 1999. Draft Buncombe County Zoning Ordinance, Asheville, North Carolina

Carter, M. et. al. 1999. A geologic adventure along the Blue Ridge Parkway in North Carolina. Bulletin No. 98. North Carolina Geological Survey, Dept. of Environment and Natural Resources. Raleigh, NC

Coker, W.C. and H. R. Totten. 1937. Trees of the southeastern states. University of North Carolina Press, Chapel Hill. 417 p

Cook et. al. 1979. Thin-skinned tectonics in the crystalline Southern Appalachians; COCORP seismic-reflection profiling of the Blue Ridge and Piedmont. Geology 7: 563-567

Crittenden, C, C. 1938. Editor. North Carolina Historical Review. Vol. XV (3). North Carolina Historical Commission. Raleigh, NC

Freeman, L. H. and S. L. Jenson. 1998. How to write quality EISs and EAs. Shipley Environmental, Inc. Bountiful, Utah. 84 p + Appendices

Ganyard, R. L. 1968. Threat from the west: North Carolina and the Cherokee, 1776-1778. North Carolina Historical Review (January 1968) 47-66

Green, C. H. 1939. Trees of the south. University of North Carolina Press. 551 p

Hamilton, J.G. deRoulhac, ed. 1940. The revolutionary diary of William Lenoir. Journal of Southern History (May 1940):247-259

Harwood Beebe. 1979. Water works improvement study for Town of Canton, North Carolina. Harwood Beebe Company, Spartanburg, South Carolina

Holt, P.C. et. al. 1969. The Distributional History of the Biota of the Southern Appalachians. Part 1: Invertebrates. Research Division Monograph 1. Virginia Polytechnic Institute, Blacksburg, Virginia. 295 p

Keel, B. C. 1976. Cherokee archaeology. University of Tennessee Press, Knoxville. 289 p

King, D. H. 1982. Cherokee heritage. Museum of the Cherokee Indians, Cherokee, NC. 228 p

Kuchler, A.W. 1964. Potential natural vegetation of the conterminous United States. American Geographical Society, Special Publication No. 36, Manual with map.

La Gorce, J.O. 1926. Pirate rivers and their prizes. National Geographic Magazine Vol L (1). National Geographic Society, Washington, D.C.

Levine, K. 1980. A history of eastern Haywood County Townships Beaverdam, Cecil, Clyde,. East Fork and Pigeon. Beginning To 1980. Typed manuscript 235 pages. Canton Area Historic Museum. Canton, NC.

Lord, W. G. 1976. Blue Ridge Parkway. Guide, Book Four Asheville-Great Smokies. Hexagon Company, Asheville, NC.

Medford, W.C. 1963. Mountain people, mountain times. Miller Printing. Asheville, NC. 177p

Merschat, C.E. and L.S. Wiener. 1988. Geology of the Sandymush and Canton quadrangles, North Carolina. Bull. 90. North Carolina Geological Survey.

NOAA. 1976. Climatological Data Annual Summary North Carolina. Vol. 81 No. 13. National Oceanic and Atmospheric Administration, National Climatic Center, Asheville, NC.

North Carolina Department of Environment and Natural Resources, Division of Environmental Management (DENR/DEM).1995. French Broad River Basinwide Water Quality Management Plan. Raleigh, NC.

Nuefeld, R. 1999. Early settlers viewed local area as the "Promised Land." Asheville Citizen-Times November 29. 1999. Asheville, NC.

Patton, S. S. 1954. Smathers from Yadkin valley to pigeon river. Published by author, Hendersonville, NC. 56 p

Pittillo, D.J. and G. Smathers. 1979. Phytogeography of the Balsam Mountains and Pisgah Ridge, Southern Appalachian Mountains. In: H. Lieth and E. Landolt, (EDS.) Contributions to the knowledge of flora and vegetation in the Carolinas. Proceedings of the 16th International Phytogeographical Excursion (IPE), 1978 Through southeast U.S. Vol. 1. Veroff Geobot. Inst., ETH, Stiftung Rubel Zurich. 297 p. (Excursion Proceedings)

Powell, W. S. 1976. The North Carolina Gazetteer. University of North Carolina Press. Chapel Hill, NC 561 p

Rankin, R. Ed. 1996. North Carolina Nature Writing. John E. Blair, Winston-Salem, North Carolina

Simpson, M.B. Ed. 1980. William Brewster's exploration of the southern Appalachians Mountains: the journal of 1885. In: the North Carolina Historical Review Vol LVII, January 1980. NC Historical Commission. Raleigh, NC

Smathers, F. 1956. The last pioneer of western North Carolina. Glade House. Coral Gables, Florida

Smathers, G.A. 1982. Fog interception on four southern Appalachian mountain sites. Journal of the Elisha Mitchell Scientific Society 98(3): 119-129.

Smathers, G.A. 1986. The Town of Canton's review and evaluation of the Department of Energy area recommendations report that selected Western North Carolina as a proposed potentially acceptable site for a nuclear waste repository. Town of Canton, Canton, N.C., 22p. with 11 attachments. (Tech. Res. Rpt.).

Smathers, G. A. 1992. Pigeon river scenic trail: Preliminary plan for an interpretive prospectus. PRW-IR No.1. Town of Canton, NC

Smathers, G.A. 1992a. Map and description of Hominy Watershed-information base for WS classification under 1989, NC Watershed Protection Act. Report. Town of Canton.

Smathers, G.A. 1994. Draft-Bioecology of Rough Creek Watershed-a general overview. 31 p plus Appendices.

Smathers, G.H. 1938. The history of land titles in western North Carolina. The Miller Printing Co. Asheville, NC

Society of American Foresters (SAF).1975. Forest cover types of North America (exclusive of Mexico). Reprint. Society of American Foresters, Bethesda, Maryland.

Sondley, F.A. 1930. A history of Buncombe County North Carolina. Volume I and II. The Advocate Printing Company, Asheville, N.C.
TVA, 1966. Floods on Pigeon River in vicinity of Canton and Clyde, North Carolina. Report No. 0-5866. Knoxville, Tennessee

TVA 1979. Precipitation In Tennessee River Basin. 1979 Annual Report No. 0-243-A79. Tennessee Valley Authority, Division Of Natural Resources Services, Data Services Branch, Knoxville, Tenn.

United States Geological Survey (USGS).1990. Canton, N.C. Quadrangle 1:24000. 35082-E7-TF-024. Reston, Virginia.

Ward, H. T. and R. P. Davis 1999. Time before history: the archaeology of North Carolina. University of North Carolina Press, Chapel Hill. 312 p

Watts R. 1993. Canton centennial 1893-1993. The Enterprise special souvenir supplement. Mountaineer-Enterprise, Waynesville, NC.

APPENDIX 1

EXTRA TERRITORIAL JURISDICTION (ETJ) ORDINANCE

EXTRATERRITORIAL JURISDICTION ORDINANCE

Ordinance Establishing
Extraterritorial Jurisdiction Boundaries

WHEREAS, the 1971 General Assembly of the State of North Carolina revised the enabling acts granting authority to municipalities to adopt, administer, and enforce zoning and subdivision regulation ordinances, building codes, and minimum housing standards and other related measures: and

WHEREAS, G.S. 160A-360 provides that the delegated municipal powers conferred by Article 19 of Chapter 160A may be exercised within the extraterritorial jurisdiction surrounding a municipality within an area defined by geographical features identifiable on the ground, but extending not more than one (1) mile beyond its corporate limits, providing that such powers are exercised by the municipality within its corporate limits: and

WHEREAS, G.S. 160A-360 further provides that any municipality wishing to exercise extraterritorial jurisdiction of powers conferred under Article 19. Chapter 160A shall adopt ,and may amend from time to time, an ordinance specifying the areas to be included: and

WHEREAS, the area is to be based upon existing of projected urban development and areas of critical concern to the municipality evidenced by the officially adopted plans for its development, and is to be defined, to the extend feasible, in terms of geographical features identifiable on the ground, and that the municipality may, in its discretion, exclude from such extraterritorial jurisdictional areas separated from the town by barriers to urban growth and areas whose projected development will have little impact upon the town; and

WHEREAS, G.S. 160A-360 further requires that the boundaries specified in the ordinance shall at all times be drawn on a map, set forth in a written description, or shown by a combination of these techniques, and maintained in the same manner as requires by G.S. 160A-22 for the delineation of the corporate limits further provided that said delineation shall be recorded in the Office of the Register of Deeds: and

WHEREAS, the Town Board of aldermen of the Town of Canton deems it to be in the public interest and beneficial to the public health, safety, and welfare to exercise certain powers authorized by article 19, Chapter 160A in the extraterritorial jurisdiction surrounding the municipality.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN BOARD OF ALDERMEN OF THE TOWN OF CANTON:

Section1. The following described area is included in the Town of Canton's Extraterritorial Jurisdiction.

BEGINNING at a point in the center of the Southern Railway in the existing eastern town limits, thence with the center of the Southern Railway in an easterly direction approximately one-mile to the north-western boundary of Betty Jo Coleman's property ; thence S 3°W to the center of Hominy Creek; thence in a westerly direction with the center of Hominy Creek to a point where North Hominy Creek joins Hominy Creek, thence measuring a distance of 200' from the center of the right-of-way of Asheville Highway, parallel to the Asheville Highway, continuing in a westerly direction to a point in the existing town limits, thence following the existing town limits to the beginning.

This is a general description and should not be construed to be an engineering accurate description.

Section 2. The official copy of this ordinance and map shall be on record in the office of the town clerk for public inspection during normal business hours. The Town Clerk shall cause a certified copy of this ordinance and map and any subsequent amendments to be recorded in the offices of the Register of Deeds of the County of Haywood. The Town Clerk shall cause signs, signposts, or similar readily identifiable markers to be installed at points of intersection of the above described boundary with all roads, streets, and highways.

Section 3. All ordinances or parts of ordinances of the Town of Canton, which are in conflict herewith are hereby repealed to the extend of such conflict.

Section 4. This ordinance shall have full force and effect from and after August 12, 1997.

/s/ Robert M. Phillips
Robert M. Phillips, Mayor

/s/ Jimmy Flynn
Jimmy Flynn, Town Clerk

APPENDIX 2

GEOLOGICAL TIME TABLE

GEOLOGICAL TIME TABLE

Era	Millions Ago of Yrs	Period	Epoch	Duration Millions Yrs
		Quartanery	Holocene	Last 10,000 yrs
		Pleistocene	2.5	2.5
Cenozoic			Pliocene	4.5
	7			
			Miocene	19.0
	26			
		Tertiary	Oligocene	12.0
	38			
			Eocene	16.0
	54			
			Paleocene	11.0
	65			
		Cretaceous		71.0
	136			
Mesozoic		Jurassic		54.0
	190			
		Triassic		35.0
	225			
		Permian		55.0
	280			
		Pennsylvanian (carboniferous)		45.0
	325			
		Mississippian (carboniferous)		20.0
	345			
Paleozoic		Devonian		50.0
	395			
		Silurian		35.0
	430			
		Ordovician		70.0
	500			
		Cambrian		70.0
	570			
Precambrian/Proterozoic				4030.0

Formation of Earth's Crust = 4,600,000,000 Years Ago

APPENDIX 3
GROUNDWATER POTENTIAL AT TURNPIKE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611 - PHONE (919) 733-3221

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. N89 L14 Serial No. 6033
Lat. 353209 Long. 824548 Pc. 1
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

RILLING CONTRACTOR: Air Drilling Co.

RILLER REGISTRATION NUMBER: 244

STATE WELL CONSTRUCTION PERMIT NUMBER: 10-0196-WS-0111

WELL LOCATION: (Show sketch of the location below)
Nearest Town: CANDLER County: BUNCOMBE
US 19-23
(Road, Community, or Subdivision and Lot No.)

OWNER OLD TURNPIKE INN & GOLF COURSE
DDRESS c/o WILLIAM MADDOX
(Street or Route No.)
CANDLER, NC 28715
City or Town State Zip Code

ATE DRILLED 11-1-88 USE OF WELL Water System
OTAL DEPTH 345' CUTTINGS COLLECTED ☐ Yes ☐ No
OES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
TATIC WATER LEVEL: ______ FT. ☐ above / ☐ below TOP OF CASING.
TOP OF CASING IS 1½ FT. ABOVE LAND SURFACE.
IELD (gpm): 235 METHOD OF TEST Pump Test
ATER ZONES (depth): 130', 170' & 310'

HLORINATION: Type HTH Amount ______

ASING:

Depth From	To		Diameter	Wall Thickness or Weight/Ft.	Material
0	57	Ft.	6¼		Galv.
		Ft.			
		Ft.			

ROUT:

Depth From	To		Material	Method
0	20	Ft.	Grout	Poured
		Ft.		

CREEN:

Depth From	To		Diameter	Slot Size	Material
		Ft.	in.	in.	
		Ft.	in.	in.	
		Ft.	in.	in.	

RAVEL PACK:

Depth From	To		Size	Material
		Ft.		
		Ft.		

DRILLING LOG

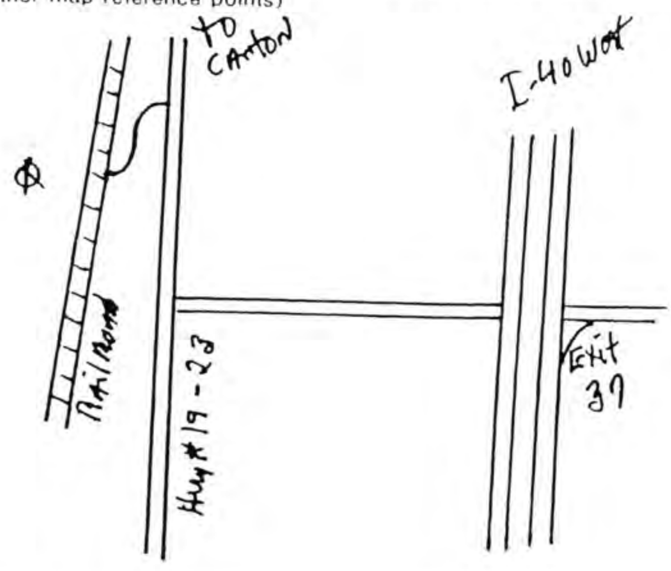
Depth From	To	Formation Description
0	57'	Dirt
57'	345'	Rock

INSP 11/29/88

RECEIVED
NOV 21 1988
Groundwater Section
Asheville Regional Office

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)



MARKS ______

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

William Maddox 11-18-88
SIGNATURE OF CONTRACTOR OR AGENT DATE

Revised 6/88

Submit original to Division of Environmental Management and copy to well owner.

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. BOX 27687 - Raleigh, N. C. 27611

Bu 6033
Well #1

UMPING TEST
RECORD

est Conducted by: Air Drilling Co. Well Construction Permit No. 10-0196-WS-88

RECEIVED
NOV 21 1988
Groundwater Section
Asheville Regional Office

1. WELL LOCATION: Nearest Town: Asheville County: Buncombe
(Road No., Community, or Subdivision and Lot No.) Quadrangel No. N89K14
2. OWNER: Old Turnpike Inn Golf Course Asheville, N.C. 28814
Name Address
3. USE OF WELL: ( ) Domestic (X) Public ( ) Industrial ( ) Irrigation ( ) ( )
Other
4. WELL DEPTH: 345 ft. Casing Diameter 6 in. Casing type: Galv.
5. DRILLING CONTRACTOR: ~~Air Drilling Co.~~ Was casing grouted? yes
6. STATIC WATER LEVEL: 0 ft. above / below top of casing.
Date Measured: 11-7-88 Casing is 1½ ft. above land surface.
7. WELL YIELD: ~~XXX~~ 235 gpm. Specific Capacity: gpm/ft.-dd.
8. PUMPING WATER LEVEL: ~~XXX~~ 114 ft. after 24 hours at ~~XXX~~ 235 gpm.
9. CHLORINATION: Type HTH Amount
10. TIME AND DATE: PUMP STARTED: 11-7-88 10:30 AM PUMP STOPPED: 11-8-88 10:30 AM
11. WATER LEVEL MEASURING DEVICE: Water Level Indicator FLOW MEASURING DEVICE: meter
12. TEST PUMP: Type sub. Make Pleuger Horse Power 20
Capacity gpm at T D H. Intake Depth ft.

Time	Water Level	Pumping Rate			Remarks
11-7-88 10:30 AM	0	250 GPM			Pump Set 210'
10:35	50'	250			20 H.P. Pleuger
10:40	60'	245			Meter Start: 0765830
10:45	65'	245			Meter Stop 1090790
10:50	68'	245			
10:55	70'	245			
11:00	72'	245			
11:05	74'	244			
11:10	76'	244			
11:15	77'	243			
11:20	79'	243			
11:25	80'	243			

J-40 Submit one copy to Environmental Management and one to owner.

TIME	WATER LEVEL	GPM
7-88		
1:30 AM	81'	242
1:45	84'	241
2:00 Noon	87'	241
1:00 PM	93'	240
2:00	97'	240
3:00	100'	238
4:00	101'	238
5:00	102'	237
6:00	104'	237
7:00	105'	237
8:00	107'	237
9:00	108'	237
0:00	110'	237
1:00	110'	236
2:00 Midnight)	111'	236
8-88		
1:00 AM	112'	236
2:00	113'	236
3:00	113'	236
4:00	113'	236
5:00	114'	235
6:00	114'	235
7:00	114'	235
8:00	114'	235
9:00	114'	235
0:30	114'	235

END OF PUMP TEST

RECOVERY

TIME	WATER LEVEL
11-8-88	
10:30	114'
10:35	65'
10:40	60'
10:45	57'
10:50	56'
10:55	55'
11:00	54'
11:05	53'
11:10	52'
11:15	51'
11:20	50'
11:25	49'
11:30	48'
11:45	46'
12:00 Noon	43'
12:15	41'
12:30	39'

END OF RECOVERY

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919)733-3221

FOR OFFICE USE ONLY Bu
Quad. No. N89 K16 Serial No. 6035
Lat. 353207 Long. 824550 Pc 1
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Air Drilling Co.

DRILLER REGISTRATION NUMBER 244

STATE WELL CONSTRUCTION PERMIT NUMBER: 10-0196-WS-0111

WELL LOCATION: (Show sketch of the location below)

Nearest Town: CANDLER

US 19-23
(Road, Community, or Subdivision and Lot No.)

County: BUNCOMBE

OWNER OLD TURNPIKE INN & GOLF COURSE

ADDRESS C/O WILLIAM MADDOX (Street or Route No.)

CANDLER, NC 28715
City or Town State Zip Code

DATE DRILLED 11-3-88 USE OF WELL Water System

TOTAL DEPTH 545' CUTTINGS COLLECTED ☐ Yes ☐ No

DOES WELL REPLACE EXISTING WELL? ☐ Yes ☐ No

STATIC WATER LEVEL: _____ FT. ☐ above ☐ below TOP OF CASING,

TOP OF CASING IS 1½ FT. ABOVE LAND SURFACE.

YIELD (gpm): 33 METHOD OF TEST Pump Test

WATER ZONES (depth): 160', 230' & 410'

CHLORINATION: Type HTH Amount

CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
From	0	81 Ft.	6¼		Galv.
From		To Ft.			
From		To Ft.			

GROUT:

	Depth From	Depth To	Material	Method
From	0	20 Ft.	Grout	Poured
From		To Ft.		

SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

GRAVEL PACK:

	Depth From	Depth To	Size	Material
From		To Ft.		
From		To Ft.		

REMARKS:

DRILLING LOG

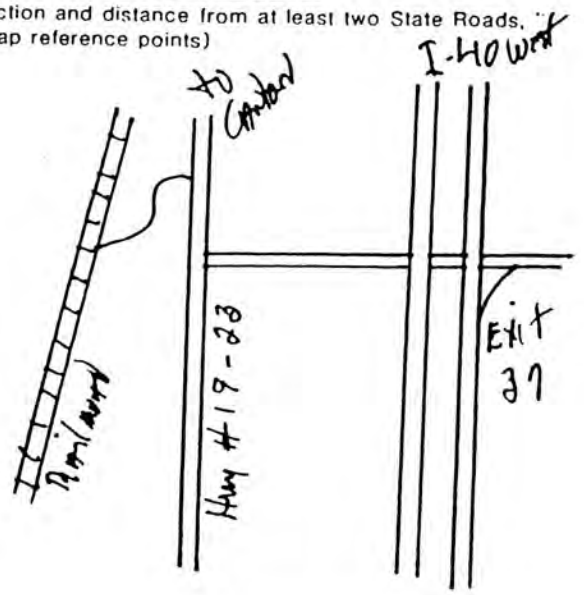
Depth From	Depth To	Formation Description
0	81'	Dirt
81'	545'	Rock
		INSP - 11/29/88

RECEIVED
NOV 21 1988
Groundwater Section
Asheville Regional Office

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)



I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

William Maddox 11-28-88
SIGNATURE OF CONTRACTOR OR AGENT DATE

1 Revised 6/88

Submit original to Division of Environmental Management and copy to well owner.

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. BOX 27687 - Raleigh, N. C. 27611

Well #3 Bu 6035

JMPING TEST
RECORD

est Conducted by: Air Drilling Co. Well Construction Permit No. 10-0196-WS-0117

1. WELL LOCATION: Nearest Town: Asheville County: Buncombe
(Road No., Community, or Subdivision and Lot No.) Quadrangel No. N89 K16

RECEIVED
NOV 21 1988
Groundwater Section
Asheville Regional Office

2. OWNER: ~~Old Turnpike Inn Golf Course~~ ~~Asheville, N.C.~~
Name Address

3. USE OF WELL: ( ) Domestic (x) Public ( ) Industrial ( ) Irrigation ( ) Other

4. WELL DEPTH: 545 ft. Casing Diameter 6 in. Casing type: Galv.

5. DRILLING CONTRACTOR: ~~Air Drilling Co.~~ Was casing grouted? yes

6. STATIC WATER LEVEL: 252' ft. above / ~~below~~ top of casing.
Date Measured: 11-17-88 Casing is 1½ ft. above land surface.

7. WELL YIELD: 33 gpm. Specific Capacity: gpm/ft.-dd.

8. PUMPING WATER LEVEL: 252' ft. after 24 hours at 33 gpm.

9. CHLORINATION: Type HTH Amount

0. TIME AND DATE: PUMP STARTED: 11-16-88 11:30 AM PUMP STOPPED: 11-17-88 11:30 AM

1. WATER LEVEL MEASURING DEVICE: Water Level Indicator FLOW MEASURING DEVICE: Meter

2. TEST PUMP: Type Sub. Make Pleuger Horse Power 15
Capacity gpm at T D H. Intake Depth ft.

Time	Water Level	Pumping Rate			Remarks
11-16-88 11:30 AM	60' ~~85'~~	85 GPM			Meter Start: 5024145
11:35	195'	75			Meter Stop: 5071215
11:40	240'	37			15 H.P. Pleuger
11:45	~~252~~ 253'	37			Set 252'
11:50	252'	36			
11:55	252'	36			
12:00Noon	252'	36			
12:30PM	252'	35			
1:00	252'	35			
2:00	252'	34			
3:00	252'	34			
4:00	252'	33			

I-40 Submit one copy to Environmental Management and one to owner.

TIME		WATER LEVEL	GPM
16-88			
5:00		252'	33
6:00		252'	33
7:00		252'	33
8:00		252'	33
9:00		252'	33
10:00		252'	33
11:00		252'	33
12:00	Midnight	252'	33
17-88			
1:00	AM	252'	33
2:00		252'	33
3:00		252'	33
4:00		252'	33
5:00		252'	33
6:00		252'	33
7:00		252'	33
8:00		252'	33
9:00		252'	33
10:00		252'	33
11:30		252'	33

END OF PUMP TEST

RECOVERY

TIME		WATER LEVEL
11017088		
11:30	AM	252'
11:35		130'
11:40		105'
11:45		95'
11:50		90'
11:55		87'
12:00	Noon	85'
12:05		83'
12:10		81'
12:15		79'
12:20		78'
12:25		77'
12:30		76'
12:45		74'
1:00		71'
1:15		70'
1:30		69'

End of Recovery

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919)733-3221

FOR OFFICE USE ONLY Bu
Quad. No. N89 K15 Serial No. 6034
Lat. 353208 Long. 824547 Pc 1
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Air Drilling Co.

DRILLER REGISTRATION NUMBER 244

STATE WELL CONSTRUCTION PERMIT NUMBER: 10-0196-WS-0111

WELL LOCATION: (Show sketch of the location below)

Nearest Town: CANDLER

US 19-23

(Road, Community, or Subdivision and Lot No.)

County: BUNCOMBE

OWNER OLD TURNPIKE INN & GOLF COURSE

ADDRESS c/o WILLIAM MADDOX
(Street or Route No.)

CANDLER, NC 28715
City or Town State Zip Code

DATE DRILLED 11-2-88 USE OF WELL Water System

TOTAL DEPTH 500' CUTTINGS COLLECTED ☐ Yes ☐ No

DOES WELL REPLACE EXISTING WELL? ☐ Yes ☐ No

STATIC WATER LEVEL: ____ FT. ☐ above ☐ below TOP OF CASING,

TOP OF CASING IS ____ FT. ABOVE LAND SURFACE.

YIELD (gpm): 45 METHOD OF TEST Pump test

WATER ZONES (depth): 190', 230', 250' & 310'

CHLORINATION: Type HTH Amount

CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	75' Ft.	6¼		Galv.
		Ft.			
		Ft.			

GROUT:

	Depth From	To	Material	Method
	0	20 Ft.	Grout	Poured
		Ft.		

SCREEN:

	Depth From	To	Diameter	Slot Size	Material
		Ft.	in.	in.	
		Ft.	in.	in.	
		Ft.	in.	in.	

GRAVEL PACK:

	Depth From	To	Size	Material
		Ft.		
		Ft.		

REMARKS:

DRILLING LOG

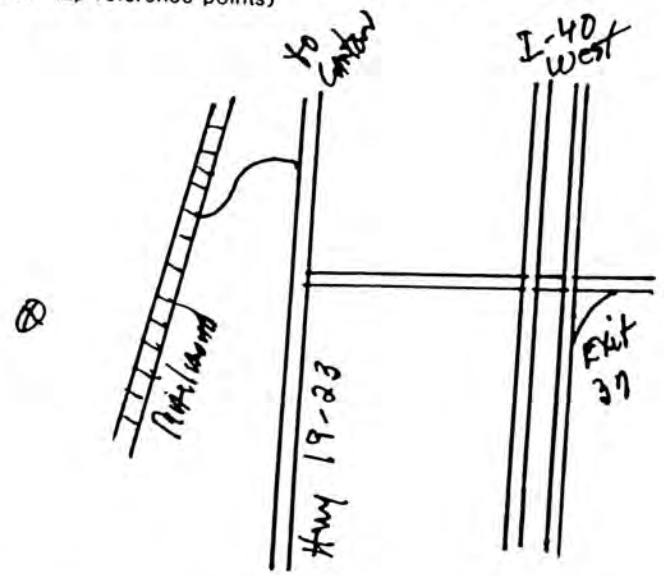
From	To	Formation Description
0	75'	Dirt
75'	500'	Rock
		INSP - 11/29/88

RECEIVED
NOV 21 1988
Groundwater Section
Asheville Regional Office

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)



I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE 11/18/88

Revised 6/88

Submit original to Division of Environmental Management and copy to well owner.

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. BOX 27687 - Raleigh, N. C. 27611

Bu 6034
Well #2

MPING TEST
RECORD

st Conducted by: Air Drilling Co. Well Construction Permit No. 10-0196-WS-0111

1. WELL LOCATION: Nearest Town: Asheville County: ~~Buncombe~~ RECEIVED
(Road No., Community, or Subdivision and Lot No.) Quadrangel No. N89 E15
NOV 21 1988
2. OWNER: Old Turnpike Inn Golf Course (Name) Asheville, N.C. (Address) Groundwater Section Asheville Regional Office
3. USE OF WELL: ( ) Domestic (X) Public ( ) Industrial ( ) Irrigation ( ) Other
4. WELL DEPTH: 500 ft. Casing Diameter 6 in. Casing type: Galv.
5. DRILLING CONTRACTOR: Air Drilling Co. Was casing grouted? yes
6. STATIC WATER LEVEL: 20 ft. above / ~~below~~ top of casing.
Date Measured: 11-8-88 Casing is 1½ ft. above land surface.
7. WELL YIELD: 45 gpm. Specific Capacity: gpm/ft.-dd.
8. PUMPING WATER LEVEL: 252 ft. after 24 hours at 45 gpm.
9. CHLORINATION: Type HTH Amount
0. TIME AND DATE: PUMP STARTED: 11-8-88 12:00 Noon PUMP STOPPED: 11-9-88 12:00 Noon
1. WATER LEVEL MEASURING DEVICE: Water level Indicator FLOW MEASURING DEVICE: Meter
2. TEST PUMP: Type Sub. Make Pleuger Horse Power 15
Capacity gpm at T D H. Intake Depth ft.

Time	Water Level	Pumping Rate			Remarks
-8-88					
2:00 Noon	20'	85 GPM			Pump set 252'
2:05	180'	75			15 H.P. Pleuger
2:10	252'	60			~~Meter Start: 4959195~~
2:15	252'	50			Meter Stop: 5024145
2:20	252'	50			
2:25	252'	50			
2:30	252'	50			
2:45	252'	48			
:00	252'	47			
:00	252'	46			
:00	252'	46			
:00	252'	46			

-40 Submit one copy to Environmental Management and one to owner.

TIME	WATER LEVEL	GPM
11-8-88		
5:00	252'	45
6:00	252'	45
7:000	252'	45
8:00	252'	45
9:00	252'	45
10:00	252'	45
11:00	252'	45
12:00Midnight)	252'	45
11-9-88		
1:00 PM	252'	45
2:00	252'	45
3:00	252'	45
4:00	252'	45
5:00	252'	45
6:00	252'	45
7:00	252'	45
8:00	252'	45
9:00	252'	45
10:00	252'	45
11:00	252'	45
12:00	252'	45

END OF PUMP TEST

RECOVERY

TIME	WATER LEVEL
12:00 Noon	252'
12:05 PM	195'
12:10	150'
12:15	110'
12:20	95'
12:25	84'
12:30	78'
12:35	72'
12:40	66'
12:45	63'
12:50	61'
12:55	58'
1:00	55'
1:15	50'
1:30	45'
1:45	41'
3:00	39'

END OF RECOVERY

APPENDIX 4

RUTHERFORD TRACE

d Miles

ORDER OF EXERCISES
at the
UNVEILING OF HISTORICAL MARKER

Located on south side of US 19-23, opposite junction with old Waynesville Road, about 400 yards west of overhead bridge of Oakview Road, near Enka.

Inscription on Marker:
P 39

RUTHERFORD TRACE
The expedition led by Gen. Griffith Rutherford against the Cherokee Sept., 1776, camped nearby along Hominy Creek.

Presiding:	Mrs. Sadie Smathers Patton, Member Executive Board, State Department of Archives and History.
Reading of Psalm 121,	Led by Mrs. J. V. Erskine, State Vice Regent, Daughters of American Colonis
North Carolina's Marker Program,	Mr. D. L. Corbitt, of Raleigh
This Historic Place,	Mr. W. A. Egerton Chief Counsel, Enka Corporation
Today's event in the work of our Organization,	Dr. D.J.Whitener, President, WNC Historical Association
Unveiling of Marker,	Mr. H. C. Wilburn, Waynesville
Presentation of Tributes from Patriotic Organizations,	Mrs. A.D.Barnett, Regent, Unak Chapter, Daughters of American Colonists, Ruth Davidson Chapter, DAR Edward Buncombe Chapter, DAR N. C. Division, UDC, Mrs. H. W. Love, Historian Fannie Patton Chapter, and Asheville Chapters, UDC, American Legion Auxiliary, Mrs. T. C. Jowitt, National League American Pen Women, Mrs. Thos. P. Sharpe.
Dedicatory Sentences,	Col. Paul A. Rockwell, WNC Historical Association
Benediction,	Mrs. G. G. Peebles, Chaplain Joseph McDowell Chapter, DAR.

APPENDIX III

RUTHERFORD TRACE

Locations Of North Carolina Highway Historic Markers
In
Buncombe, Haywood, Jackson and Macon Counties

37	RUTHERFORD TRACE erected 1953 replaced 1988	The expedition led by Gen. Griffith Rutherford against the Cherokee, September, 1776, passed nearby on the banks of the Swannanoa River.	US 25 north of I- in Asheville Buncombe Co.
38	RUTHERFORD TRACE 1954 replaced 1984	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, passed nearby.	NC 191 southwest o Asheville Buncombe Co.
39	RUTHERFORD TRACE 1954	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, camped nearby along Hominy Creek.	US 19/23 at Enka Buncombe Co.
40	RUTHERFORD TRACE 1954 replaced 1959 MISSING since 1976	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, passed nearby along Hominy Creek.	US 19/23 at Hominy Creek east of Cano Haywood Co.
41	RUTHERFORD TRACE 1954 replaced 1977 MISSING since 1995	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, passed here, through Pigeon Gap.	US 276 at Pigeon G east of Waynesvil/e Haywood Co.
42	RUTHERFORD TRACE 1954 MISSING	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, passed here, through Balsam Gap.	US 19A/23 at Balsa Gap southwest of Waynesville Haywood Co.
2	RUTHERFORD TRACE 1954 replaced 1996	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, passed nearby along Savannah Creek.	US 23/441 at NC 1 southwest of Webst Jackson Co.
3	RUTHERFORD TRACE 1954 STORAGE at last report	The expedition led by Gen. Griffith Rutherford against the Cherokee, Sept., 1776, passed here, through Cowee Gap.	US 23/441 west of Pumpkintown at Jackson/Macon coun line Jackson Co.

ADDITIONAL

Location of North Carolina Highway Historic Markers
In
Haywood County

	QUALLA BOUNDARY erected 1939	Soco Gap, initial point of U.S. survey, 1876, of Cherokee Reservation, created through earlier efforts of W. H. Thomas, white Cherokee chief.	US 19 at Soco Gap southwest of Maggie Valley
0	MARTIN'S SURRENDER 1941	Gen. James G. Martin surrendered the army of western North Carolina, the last Confederate force in the state, in Waynesville, May 6, 1865.	US 23 Business (Main Street) in Waynesville
9	MORNING STAR CHURCH 1949	Organized by German Lutherans about 1825; Methodist since 1866. Is 2 1/2 miles south.	US 19/23 (Park Street) at Academy Street in Canton
6	FELIX WALKER 1950 replaced 1959, 1975	Revolutionary officer, member Congress, 1817-23, where, in "talking for Buncombe" (County), he gave new meaning to the word. Home was 1/2 mi. N.	US 19 west of Dellwood
0	"CATALOOCHEE TRAIL" 1959	An old Indian path across mountains used by early settlers and in 1810 by Bishop Asbury. Trail passed nearby.	US 19/23 at US 276 west of Lake Junaluska
1	"CATALOOCHEE TRAIL" 1959 replaced 1985	Indian path across the mountains used by early settlers and in 1810 by Bishop Francis Asbury. Trail passed nearby.	US 276 and I-40 at Cove Creek
8	N.C. EDUCATION ASSOCIATION 1965 replaced 1985	Organized in 1884 as N.C. Teachers Assembly in the White Sulphur Springs Hotel. Building was one mile northwest.	Depot Street in Waynesville

APPENDIX 5

PROFILE OF JOHN C. SMATHERS

(Medford 1963)

"JOHN C. SMATHERS OF TURNPIKE WAS A REMARKABLE MAN

John C. Smathers, pioneer of Turnpike, was a handy man. In fact, considering all the things he did, he was no doubt one of the handiest men ever to live in this section. And "Smathers of Turnpike" was not just a "Jack of all trades" — most everything he turned his hand to he did it well. To be sure, one had to be "handy" in those days to get along very well. For often the "cobbler, baker, and candlestick maker" could not be reached very well, if at all; neither could the doctor, carpenter and merchant.

Well, John Smathers had all these skills — and many more — such as: farmer, rock and brick mason, blacksmith, tinner, painter, plumber, harness and saddle maker, beekeeper, butcher, orchardist, hotel operator, veterinarian, school teacher, politician, stable man, gardner, cook, postmaster, and Justice of The Peace."

"*Was Large Landholder*

John C. Smathers, the son of George and Eva Kinsland Smathers, was born near Canton in 1826. He was of German-Dutch and English ancestry. Being given by his father, George Smathers, a large body of land (about 1,000 acres) at Old Turnpike on the Buncombe-Haywood line, he got off to a good start rather early in life. The land was about half-and-half in the two counties.

Here, about the years 1859-1860, Smathers built the unit of what was later to become a very remarkable roadside inn and hotel business. This original structure of 10 rooms, was built just a few feet across the line on the Buncombe County side. Being a proper distance from Asheville on the old Asheville-Ducktown state road (through which all east-west travel was funnelled), it soon became a popular stopping place. So Smathers, thrifty man of vision that he was, soon saw the need of a store. This he built, not only for the accommodation of his few valley neighbors, but also for his lodgers and for the traveling public.

Over the store he made additional rooms. Later he built a mill, blacksmith and carpentry shop, and other additions or equipment for his now varied and rapidly growing business interests."

"*One Of First Water Systems*

Smathers put in his own water system, one of the first to be installed in Buncombe County. That was before cast iron or lead pipe could be obtained here. In this system, a gravitated one, (the water was first run through a well-graded ditch into a reservoir which he constructed on a knoll overlooking the inn and store. This distance, from spring to reservoir, was about three quarters of a mile.

From the reservoir the water was run through pipes which he made out of short sections of straight pine poles which he peeled, bored out with a long, large-bit auger, then mortised tightly together, end to end, connecting with the kitchen and toilets of the hotel. This home-made system lasted for several years."

"*Horse and Stage Coach Mail Days*

Often it required many stalls to accommodate the nags and oxen of John Smathers' guests or lodgers for the night. That was the meaning of the big barn which used to stand just around the lane from the hotel.

This many-sided man also had the old Turnpike post office established at his place. It, being half way between Asheville and Waynesville, was the mail relay station, when the mails were carried by horseback and later by stage, and by train.

Often guests came by stage through the mire and mud of almost impasable roads, or through boiling dust (according to the weather). The big, high-seated, lumbering coaches were drawn by teams of four and five horses — arriving with a "whoop, hurah and lickety-split!""

"*Did Extensive Drover and Marketing Business*

When the drovers were doing a big business and driving through here to Southern markets in the '80s and early '90s, John C. Smathers was ready for them — with lodging for man, beast, cattle and fowl! Since he had built the second hotel unit (of 28 rooms) in the early '80s, he now had about 40 rooms in all. As for grain and roughage, fenced enclosures, and pasturage in season, he had a-plenty — for horses, hogs, sheep and turkeys.

It was a common sight at one of these old roadside inns and drover-stations to see the drovers "rounding up" their herds and getting started at an early morning hour before it got too hot to drive well.

The calls "Pig-ee! — pig-oh! and Co'!" were made to resound in the valley.

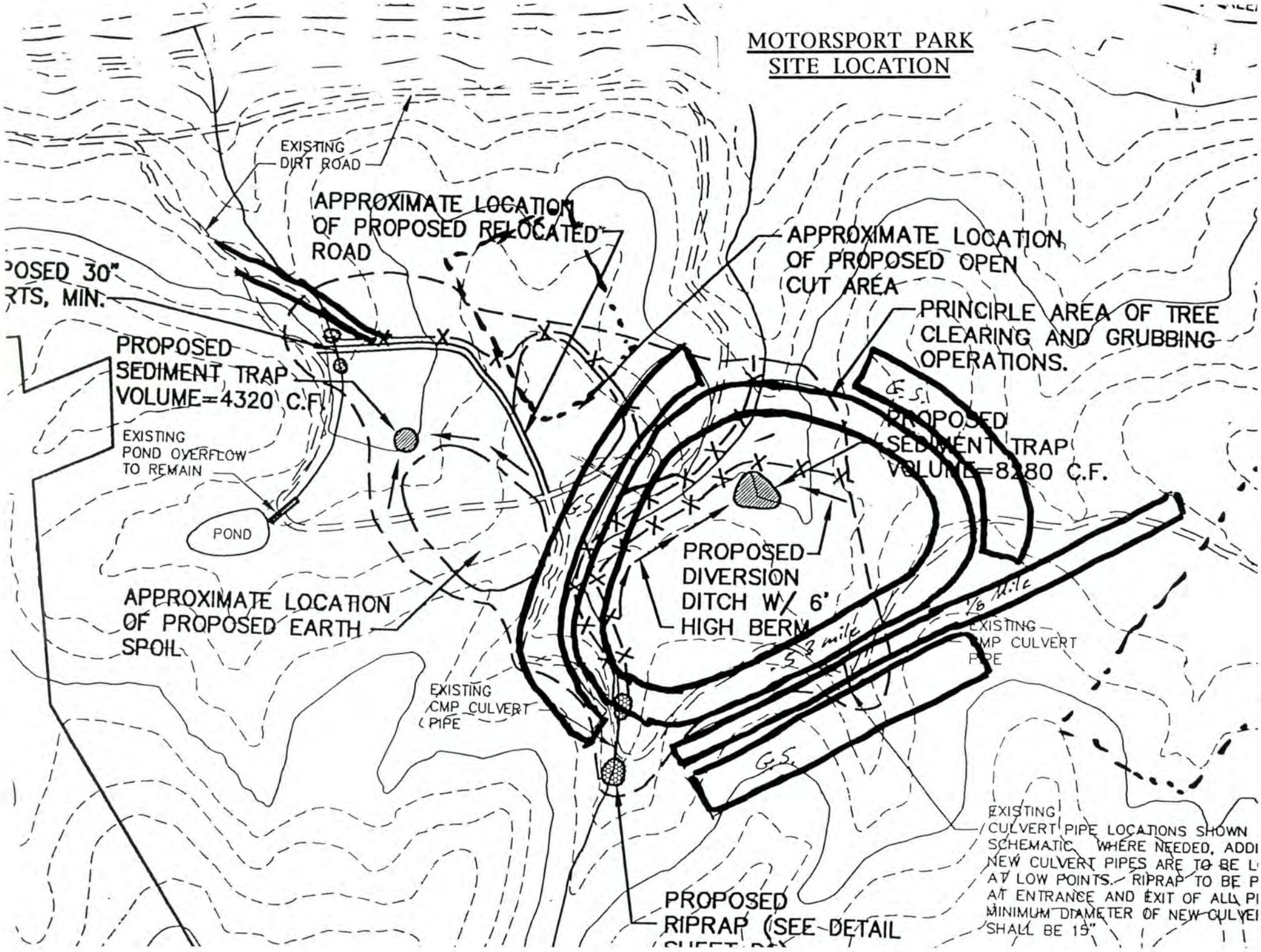
In the late afternoon, when the shades were falling, was when the turkeys, even though they might not be tired, did not drive well. Because then it was they wanted to fly up to roost — and unlucky was the drover who was not near woods or bushes for roosting places."

"*All Were Kept Busy*

John C. Smathers was, of course, a very busy man — working at something all the time, through long hours of the day and into the night. Then, at night before retiring, he would plan for the next day's work. Much grain, meats, and other provisions were required for his mill, the hotel, and the market trip; so he also kept his sons busy buying and hauling in from other sections, mostly further west, and marketing in the South Carolina towns and Augusta. The old gentleman became unable to look after his business several years prior to his death in 1918."

APPENDIX 6

MOTORSPORT PARK


MOTORSPORT PARK
SITE LOCATION
EXISTING
DIRT ROAD
APPROXIMATE LOCATION
OF PROPOSED RELOCATED
ROAD
APPROXIMATE LOCATION
OF PROPOSED OPEN
CUT AREA
PRINCIRLE AREA OF TREE
CLEARING AND GRUBBING
OPERATIONS.
PROPOSED 30"
RTS, MIN.
PROPOSED
SEDIMENT TRAP
VOLUME=4320 C.F.
EXISTING
POND OVERFLOW
TO REMAIN
POND
PROPOSED
SEDIMENT TRAP
VOLUME=8280 C.F.
PROPOSED
DIVERSION
DITCH W/ 6'
HIGH BERM
APPROXIMATE LOCATION
OF PROPOSED EARTH
SPOIL
EXISTING
CMP CULVERT
PIPE
EXISTING
CMP CULVERT
PIPE
EXISTING
CULVERT PIPE LOCATIONS SHOWN
SCHEMATIC. WHERE NEEDED, ADDI
NEW CULVERT PIPES ARE TO BE L
AT LOW POINTS. RIPRAP TO BE P
AT ENTRANCE AND EXIT OF ALL PI
MINIMUM DIAMETER OF NEW CULVEI
SHALL BE 15"
PROPOSED
RIPRAP (SEE DETAIL

APPENDIX 7
WCU ECONOMIC IMPACT STUDY

WESTERN CAROLINA UNIVERSITY
campus of the UNIVERSITY OF NORTH CAROLINA

MOUNTAIN RESOURCE CENTER
PHONE: (704) 227-7492
FAX: (704) 227-7422
INTERNET: MRC@WCU.EDU

May 14, 1999

Mr. Jay Hinson, Jr.
Haywood County Economic Development Commission
144 Industrial Park Drive
Waynesville, NC 28786

Dear Mr. Hinson;

The following is an estimate of the **economic impact for the proposed Chestnut Motorsport Racetrack** as a NASCAR short track. It is based on the information provided by Steve Westmoreland and Southcorp Properties with some assumptions (unverified) in order to prepare the attached calculations. The basic approach and some assumptions were derived from "The Economic and Fiscal Impacts of the Proposed Essex International Speedway in Maryland" prepared in November 1996 by the Office of Business and Economic Research, Maryland Department of Business and Economic Development. Please note the Maryland study and much of the published data on the growth and impact of NASCAR refers to the Supertracks and top three circuits. In developing these calculations I have also referenced information from the Asheville Speedway and researched the tracks in the NASCAR Winston Racing Series – Blue Ridge Division (which includes Asheville Motor Speedway).

To summarize the information from the attached Calculations:

Economic Impact from Annual Operations of the Racetrack

	Direct Impact	**Total Impact**
Potential Local Purchases	$ 244,000	$ 610,000
Race Track Staff Payroll	$ 93,800	$ 140,000
Subtotal	$ 337,800	$ 750,700
Est. FAN Off Track Expenditures	$ 2,646,000	$ 3,969,000
Est. TEAM Off Track Expenditures	$ 288,000	$ 432,000
TOTAL Annual Economic Impact	**$ 3,271,870**	**$ 5,151,875**
Est. Impact from Construction (once)	$ 3,949,000	$ 9,654,500

Direct Impact reflects estimate of the (initial) expenditure by the Racetrack and fans and other visitors. The **Total Impact** (sum of direct and all secondary economic benefits) reflects the estimated multiplier effect within the local economy.

Other Economic Impacts to County (refer to calculations attached)

Est. Sales Tax Revenue to County (.02)	$	68,970
Est. Occupancy Tax to County (.03)	$	20,160
Proj. Increase in County Property	$	26,316

Employment:
The only full time employment specified in the operating projections were the Office and Maintenance (total of 2). The other employment – ticket sales, concessions, parking etc. are part-time hourly for the events. Management (for sponsor sales, promotion etc.) would be contracted from SouthCorps at a percent of profits.

It is not practical with the limited time/information to attempt to estimate the number of additional jobs equivalent in community resulting from the increased economic activity in the county. At this time it is not practical to estimate the impact from the racecar teams from their expenditures for operations (employment, parts, supplies, services) beyond those associated with team member expenditures as visitors. For Haywood County, a listing of those race teams within the county and their average costs and whether they would close or relocate without a local track would have to be researched to provide a reasonable estimate of the associated economic benefit of the race track..

Please note that considering the location of the proposed facility and surrounding commercial businesses and other services, it is obvious that Haywood and Buncombe County would **share the estimated economic impact**.

I would be please to address any questions or concerns with this analysis. Thank you for the opportunity to provide this assistance to Haywood County as a service of the EDA University Center at Western Carolina University.

Sincerely;

C. Timothy Richards

C. Timothy Richards
Director

Cc: Steve Westmoreland
Louis Smith, Southcorp Properties, Inc.

Assumptions used in the Calculations:

Southcorps based, on their (HMS, LLC) management of similar short track facilities (refer to attached Fax dated 5/6/99), are projecting 24 regular events and 6 special events (total of 30 racing events) with the average attendance and ticket prices listed in the calculations. This results in projecting a total of 147,000 total attendees over the racing season (this may count the same individual multiple times if attending multiple events). Each event would involve approximately 100 race teams, with average of 4 persons per team (resulting in total of 12,000 team member "visits" across the 30 events).

To project OFF track expenditures for fans (and race teams), the total attendees was distributed as percent who were overnighters and percent who were only day-trippers (did not stay overnight near race track in hotel/campground etc. and therefore only incidental expenditures in community).

To calculate increased revenues realized by the county directly, the sales tax (total collected at 6% and the amount "returned" to county at 2%) was projected for appropriate purchases. The Occupancy Tax (3%) was projected from race fans and team members "purchasing" overnight accommodations.

Supplemental Information:
The following is a listing of the Racetracks in the NASCAR Winston Racing Series – Blue Ridge division, which would likely be the principle program for the proposed track in Haywood County. We have also researched the 1998 population within a 50-mile radius to estimate the market for fans for these similar tracks.

Racetrack	City/State	Est. 1998 Population
Asheville Motor Speedway	Asheville, NC	1,529,861
Bowman Gray Stadium	Winston-Salem, NC	1,687,945
Greenville-Pickens Speedway	Greenville,SC	1,488,217
Hickory Motor Speedway	Newton, NC	2,046,663
Kingsport Speedway	Kingsport, TN	807,664
Lonesome Pine Raceway	Coeburn, VA	758,881
Louisville Motor Speedway	Louisville, KY	1,400,013
New River Valley Speedway	Raford, VA	806,828
Tri-county Motor Speedway	Hudson, NC	1,161,720

Calculation of Direct and Total Economic Impact

			Direct Impact	Multiplier	Total Impact
Economic Impact from Construction (One time)					
Management Salaries	3 persons	$100,000	$100,000	1.5	$150,000
Engineering Services		$118,000	$118,000	1.5	$177,000
Road Construction		$270,000	$270,000	2.5	$675,000
Sewer System		$265,000	$265,000	2.5	$662,500
Construction Cost (balance)		$3,196,000	$3,196,000	2.5	$7,990,000
Total Construction Costs		$3,196,000	$3,949,000		$9,654,500
Economic Impact from Annual Operations					
Proj. Oper. Expenses (Local Purchases)					
Repairs and Maintenance		$18,450	$18,450		
Utilities		$51,100	$51,100		
Advertising and Promotions		$21,000	$21,000		
Concessions Supplies		$133,770	$133,770		
Printing		$7,500	$7,500		
Other Admin Goods or Services		$12,250	$12,250		
TOTAL Proj. Local Purchases		$244,070		2.5	$610,175
Employment					
Office and Maintenance Staff (F/T)	2 prs	$ 48,000	$ 48,000		
P/T Staff for Events		$ 45,800	$ 45,800		
Total Wages/Salaries in Local		$ 93,800		1.5	$140,700
Est. Economic Impact from Track Operations Expenditures			$337,870		$750,875
Est. Economic Impact FAN Off Track Expenditures			$2,646,000	1.5	$3,969,000
Est. Economic Impact RACE TEAM Off Track Expenditures			$288,000	1.5	$432,000
TOTAL Economic Impact - Annual			**$3,271,870**		**$5,151,875**
Economic Impact from Construction			**$3,949,000**		**$9,654,500**

Chestnut Motorsports Park, Haywood County
Calculations for Economic Impact Study

12-May-99

	Regular Events	Special Events		
Number of Events/Season	24	6		
Ave. Attendance/Event	3,500	8,000		
Total Attendance	84,000	48,000		
Ticket Prices		$15-25		
Adult	$10.00		Pit Passes	
Student/Seniors	$5.00		Ave. #/event	500
Family Pack (2+4)	$25.00		Total #	15,000
Ave. Ticket Price	$9.00	$15.00		$22.50
Proj. Revenue	$ 756,000	$ 720,000		$337,500
Total Attendance	147,000			
Total Ticket Revenue				$1,813,500
Concession Sales (On Track)				
Est. Ave./person	$3.50			
Proj Sales	$514,500			
Total Sales Tax (6%)	$30,870			
Sales tax to County(2%)	$10,290		$10,290	
Est. Purchase of Concession Supplies		$133,770		
Fans Spending Off Track	Overnight	Daytrippers		
est.% of TOTAL Attendance	20.0%	80.0%		
Est. Expenditures Off Track/person	$50	$10		
Proj. Expenditure Off Track	$1,470,000	$1,176,000		$2,646,000
Occupancy Tax	$17,640			
Total Sales Tax (6%)	$88,200	$70,560		
Sales tax to County(2%)	$29,400	$23,520	$52,920	
Race Team Spending Off Track				
(100teams/event 4 prs/team)				
Total number of team Members	12,000			
	Overnight	Daytrippers		
	35.0%	65.0%		
Est. Expenditures Off Track/person	$50	$10		
Proj. Expenditure Off Track	$210,000	$78,000		$288,000
Occupancy Tax	$2,520			
Total Sales Tax (6%)	$12,600	$4,680		
Sales tax to County(2%)	$4,200	$1,560	$5,760	

Chestnut Motorsport Park Property Tax Impact:

Current annual county property taxes on 100 acre tract		$914
Proposed annual county property taxes @ $0.61 per $100 valuation:		
- $1,050,000 property valuation 100 acres	$6,405	
- $3,414,000 facilities costs	$20,825	$27,230
Annual increase in county property taxes		$26,316

Property is currently located outside Town limits of Canton. Therefore, no town property taxes are collected. If the property owners requested satellite annexation, the town would be required to extend water/sewer services along highway 19/23 to the Westmoreland property within one year at an estimated cost of $300,000 to $500,000. At present, the Town of Canton has not been requested to provide water/sewer to the site and does not plan to do so.

If the Town of Canton annexed the 100 acre site, annual property taxes @$0.61 per $100 valuation levied by the town would be:

- $1,050,000 property valuation 100 acres	$6,405	
- $3,414,000 facilities costs	$20,825	$27,230

Additionally, the Town of Canton would receive revenues from the sale of water/sewer services. Detailed plans have not been received from the developer. Therefore, revenue amounts cannot be estimated.

It is anticipated that the extension of water/sewer along highway 19/23 along with development of the racetrack in that area would promote additional commercial development in that area. However, without data associated with other, similar projects, it is not possible to project what the economic impact would be.

May 6, 1999

To: Timothy Richards, Mountain Resource Center

From: HMS, LLC

Re: Information for Economic Impact Assessment – Haywood County

Planned Number of Events: 30
Regular Events: 24 Events, $10 Adults, $5 Students/Seniors/Military, $25 Family Pack (2 Adults, 4 Children), Average Attendance 3,500
Special Events: 6 Events, $15 - $25 Adults, Average Attendance 10,000
Pit Pass Income: $20-25 admission price into pits, average 500 per event.
Average Number of Car Teams: 100-120. They will eat, buy gas, often stay overnight, family and crew will shop, etc.
Office Staff and Maintenance Staff are full-time, the rest are part-time. Management and Sales staff are full-time and will approximate 5% of the speedway's gross income as salary and commission.
Other employment opportunities are factored into the $75,000 approximate (+/-) spent on local media in advertising and promotions. Also carpentry, masonry, electrical, asphalt, carpeting, janitorial, etc. are speedway expenses handled by local providers.
The Asheville area represents one of the strongest short track fan bases in the nation, despite managerial and ownership shortcomings at the present facility in years past. Attendance and support of local short track facilities is strong and rising where it is managed and promoted well and weaker at mismanaged facilities. This is the nature of racing at this level. Short track racing thrives where drivers and the sport are promoted. At the existing HMS, LLC facilities, attendance is robust at the facilities under our management umbrella prior to this year (Hickory, Orange County, Southern National), and growing at those new to the organization (Friendship, Asheville, St. Augustine, Lonesome Pine). Montgomery Motor Speedway is not yet open to determine trends. The combination of lower prices, a tighter race program (Rolling Thunder), excellent service, improved concession food and prices, community involvement and proper speedway promotion have a significant impact on the financial health of short tracks.

Guidelines for costs associated with various race teams:
Late Model: $150,000 – 200,000 per year, 4-10 people
Limited Sportsman: $50,000 – 75,000 per year, 3-8 people
Trucks: $50,000 – 75,000 per year, 3-6 people
Minis: $25,000 – 30,000 per year, 2-5 people
Super Sports: $35,000 – 50,000 per year, 2-5 people

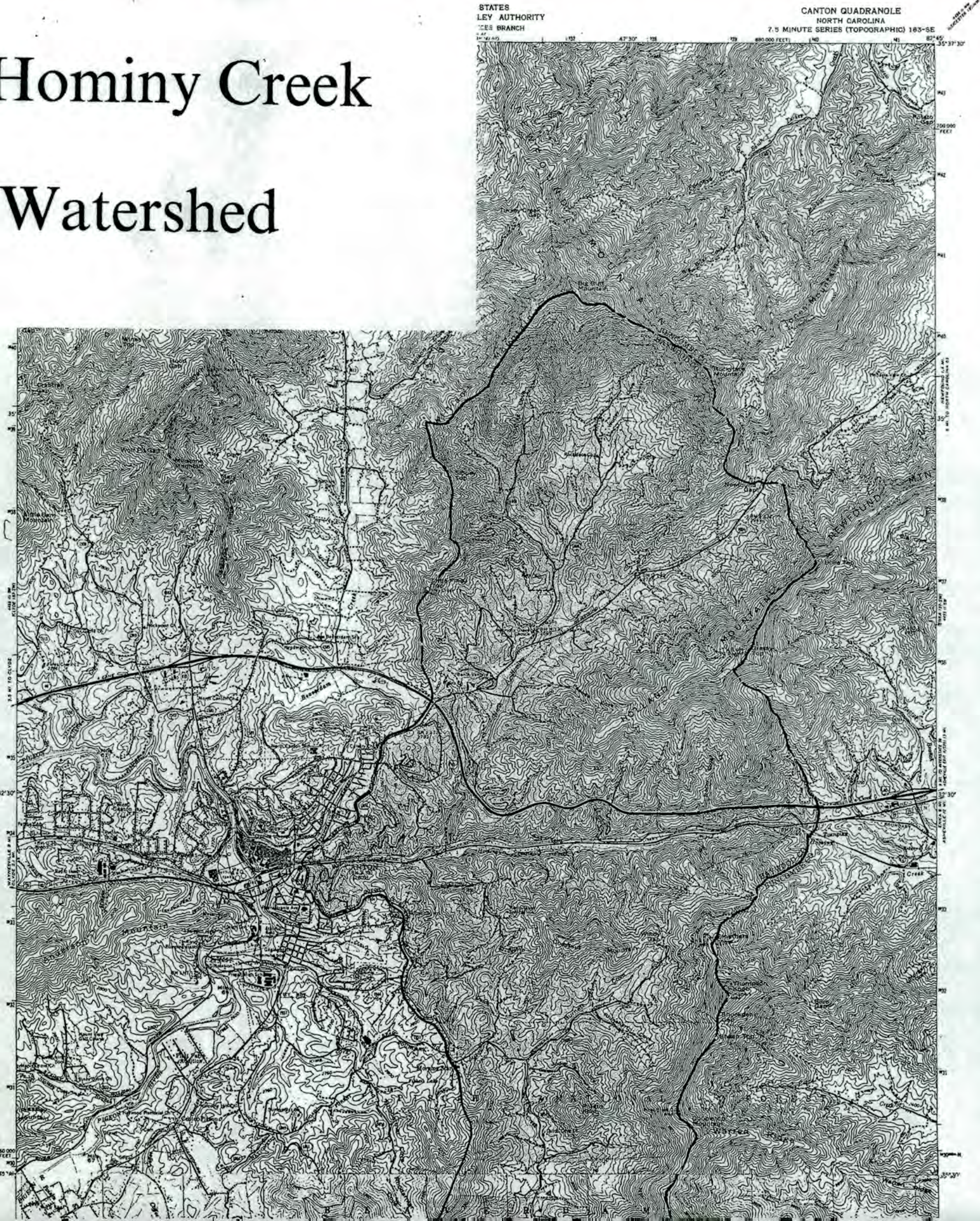
Call Asheville Motor Speedway for names and numbers of WNC race teams. (828) 236-2722

Hope this helps,

Louis Smith
SouthCorp Properties, Inc.
(803) 748-7200, FAX (803) 748-9353, louis@southcorp.net

Hominy Creek

Watershed



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Published by the Geological Survey.

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Topography by USGS by photogrammetric methods.
Map field checked by TVA, 1941

Polyconic projection. 1927 North American datum
10,000 foot grid based on North Carolina
rectangular coordinate system
1000-meter Universal Transverse Mercator grid, zone 17.
The difference between 1927 North American Datum and North
American Datum of 1983 (NAD 83) for 7.5-minute intersections
is given in USGS Bulletin 1875. The NAD 83 values are shown by
dashed corner ticks

There may be private inholdings within the boundaries of
the National or State reservations shown on this map

Revisions shown in purple and woodland compiled by the Tennessee Valley Authority from aerial photographs taken 1976 and other source data. This information not field checked. Map edited 1979

Map photoinspected 1987

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
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A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty ..... Poor motor road .....
Medium-duty ..... Wagon and jeep track .....
Light-duty ..... Foot trail .....
U. S. Route State Route
In developed areas, only through roads are classified

Faint purple dashed lines indicate selected fence and field lines visible on aerial photographs. This information is not field checked

CRUSO, N.C.
35082-07-TF-024
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1941
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