RIVER CORRIDOR PROTECTION

Introduction

The focus of this section is the protection of the natural environment of the river corridor and the surrounding lands. During the course of this study, interviewees and participants in the study workshops have raised a number of issues and concerns about the natural environment of the corridor. Primary among these is concern over a lack of coordinated planning, both among jurisdictions and in the comprehensive protection of the river corridor. Also deemed important by workshop participants are a number of specific environmental concerns: erosion and sedimentation of the river banks and at construction sites, flood protection, and the need to plan to provide protection of water quality. Similar comments were made on the need to limit impervious surfaces, the need for sustainable development and the preservation of green spaces, fisheries and wildlife habitat.

The issues and concerns expressed in this process are very similar to those raised in the late 1960s and early 1970s when protection of another part of the Chattahoochee - the stretch between Buford Dam and Peachtree Creek - first became a major interest and concern in Atlanta and surrounding areas. The result of that concern was the ARC 1972 Chattahoochee Corridor Study, a document which proposed a plan for protection of the river by guiding development to the land best suited to it, and limiting development in more sensitive areas. The plan consisted of three sets of standards: vulnerability standards, which established limits on development based on land sensitivity, buffer zone requirements along the river and streams, and requirements in the flood plain.

The study sought to develop the corridor within the land's carrying capacity. This would preserve enough natural vegetation and undisturbed buffers to allow the land to absorb the effects of development before they damaged the river and its surrounding lands. Through the Metropolitan River Protection Act, which was passed by the Georgia Legislature in 1973, the Study was adopted as the Chattahoochee Corridor Plan and remains in effect. Because of the existing Plan's success, it was used as a model for resource protection in the current Study Corridor.

Natural Features Analysis

Five of the natural factors identified in the Natural Features Inventory of the 1996 Corridor Inventory were used in this analysis. An additional factor, *Hydrology*, has been added to this analysis to provide a fuller picture of the environment of the Corridor, for a total of six factors. These factors were chosen because they provide an overview of the existing natural conditions in the corridor that can be used to identify both land areas that are sensitive to development and land with less development vulnerability.

The six factors are:

Soil Erodibility
Vegetation
Hydrology
Slope
Flood Plain
Scenic Views and Sites

Four of these factors, *Soil Erodibility, Vegetation, Hydrology* and *Slope*, have been broken down into categories (such as soil types, vegetative communities, stream order basins or slope percentages) according to relative vulnerability to development. By ranking and scoring each factor category and then overlaying each factor's scores, a picture of the vulnerability and development potential of the corridor lands was developed.

The remaining factors are not ranked for degrees of vulnerability. Because of its unique vulnerability (flooding), *Flood Plain* for the river will be identified, mapped and superimposed on the analyzed factors, overriding the vulnerability analysis.

Scenic areas near the river have been identified and inventoried for *Scenic Views and Sites*, but are not included in the vulnerability analysis or in the impact rankings. However, a description of the identified areas is included in this section with proposed incentive measures that can be used to promote their protection.

Two of the factors studied in the 1996 Inventory, *Rare, Threatened and Endangered Species* and *Wetlands,* were not used in this analysis. The information available for rare, threatened and endangered species indicated no such land animal or plant species or likely habitats in or near the corridor. Most identified mapped areas of likely wetlands were in the flood plain, which is included as one of the factors being studied.

Vulnerability Analysis

Factor Descriptions

Four of the factors, *Soils*, *Vegetation, Slope,* and *Hydrology*, were broken down into categories of specific vulnerability to disturbance and development. For example, the *Slope* vulnerability increases as the slope steepens, and the factor is divided into three categories reflecting degrees of vulnerability. The categories also address the potential impact on the river and the corridor if specific areas are cleared and developed. The breakdown of the vulnerability levels from least to most vulnerable for each of these three factors follows.

Soils Those soils least susceptible to erosion have the least land vulnerability and are better suited to development. An assessment of soil erodibility is a major component in

any effort to identify areas with constraints to development as well as those areas with fewer restrictions.

The U.S. Natural Resources Conservation Service (NRCS) assisted in assessing soil erodibility by grouping the soil taxonomic units found in the study area into five erodibility categories. The categories are based on properties that affect soil erodibility and assume the soil is unvegetated and is not mechanically altered. This methodology is the same as that used in ARC's 1972 Chattahoochee Corridor Study. As part of its assistance in the 1996 Inventory, NRCS reaffirmed the continued validity of the methodology for use in developing soil erodibility classifications. The characteristics used by the NRCS in its evaluation of corridor soils are:

1. Length, steepness, shape and complexity of slope
2. Resistance to dispersion, splashing, abrasion and transportation by runoff
3. Permeability
4. Infiltration of water into the soil
5. Total water capacity

By assessing a composite of the characteristics for each soil, the NRCS was able to divide the soil units into five erodibility categories of increasing vulnerability:

1. Low Erodibility
2. Low-to-Moderate Erodibility
3. Moderate Erodibility
4. Moderate-to-High Erodibility
5. High Erodibility

The soil erodibility category mapping for a portion of the corridor is shown in Figure 14.

Vegetation The dominant vegetation community in the Georgia Piedmont prior to European settlement was the oak-hickory hardwood forest. Extensive human activity in the last 150 years for agriculture, logging and urbanization have changed the vegetation patterns of this portion of the Piedmont, including the study area. Former agricultural land has returned to the original oak-hickory forest. Other abandoned areas are in intermediate stages of reforestation, ranging from overgrown fields to pine woods. Other areas remain in active agricultural use, whether as pasture, cropland or timber lands.

The 1972 Chattahoochee Corridor Study condensed eight identified vegetation communities into four categories. Years of work with these categories revealed that some refinement would assist in the current study. As a result, three modifications were made to the 1972 vegetation categories in developing the 1996 Inventory. First, a Mixed Pines and Hardwoods category was added to provide an intermediate step between predominately pine and predominately hardwood forests. The review of aerial photos of

both the existing Chattahoochee Corridor and the current study area showed woodlands that contained mixtures of both pines and hardwoods with neither predominating. The areas that can be classified as Mixed Pines and Hardwoods are generally hardwood areas with pines visibly interspersed among the deciduous trees in a mix of between 40 to 60 percent pine cover, as estimated from aerial photos. One or a few trees in a stand do not qualify for the classification.

The Open Field category title was modified to include pasture and successional fields. These open lands had not been included in any category previously, yet are common in the landscape.

The Barren Land category was modified to specifically include urban lands.

These changes are intended to refine the vegetation categories to help identify actual site conditions more accurately. The five vegetation categories used in this analysis, in order of increasing vulnerability, are:

1. Barren or Urban Land
2. Open Field/Pasture/Successional Field
3. Pines
4. Mixed Pines and Hardwoods
5. Hardwood Forest

An example of the vegetation category mapping is shown in Figure 15.

Hydrology: Land drainage patterns can influence the amount and makeup of surface runoff and are important indicators of land vulnerability. In general, surface water that enters the River after first flowing into a tributary stream will have more opportunity for the dilution of solids and contaminants, as well as the assimilation of organic wastes.

The streams included in this analysis are those shown as flowing streams (indicated as blue lines) on the applicable 1:24,000-scale U.S. Geologic Survey 7.5 minute quadrangles for the corridor, and which drain into the Chattahoochee. Using the quad map contours, their basin area in the corridor were mapped. The streams and their basins then were classified according to the stream order at its confluence with the Chattahoochee. Those with no branches or tributaries were classified as first order basins; those with at least one single-stem branch were classified as second order; and those with at least one multi-stem branch were classified as third order basins. Fourth order and higher stream basins were not differentiated from third-order. Land that draining directly into the river was classified as interbasin.

Most of the Study Corridor consists of interbasin land, followed by first order basins. Interbasin areas have little or no opportunity for runoff to be diluted and organic wastes to be assimilated before reaching the river. First order basins are still limited in their

dilution and assimilation abilities because of their relatively small stream flow capacity. The basins were mapped and ranked according to the likely effect of development within them would have on water quality, from least to most vulnerable:

1. Third Order Basin
2. Second Order Basin
3. First Order Basin
4. Interbasin

An example of the hydrology category mapping is shown in Figure 16.

Slope Slope has a direct effect on the suitability of land for development, on the ease of development and on water and lands surrounding the development. Steep slopes can exacerbate other vulnerabilities to development. The erosion potential of the soil increases with slope, as does the amount and speed of runoff. The effects of vegetation removal also increase on steep slopes, as runoff retention is reduced and slopes are destabilized. Steep slopes also increase the cost and difficulty of construction by limiting site access, by increased grading work, by requiring use of special design features such as retaining walls and by requiring more erosion control and runoff detention.

Slope was determined by measurement of contour intervals on the applicable 1:24,000-scale U.S. Geologic Survey 7.5 minute quadrangles for the corridor area. Slopes were grouped into the three categories of slope percentage developed in the 1972 Chattahoochee Corridor Study:

1. 0 - 10% slope
2. 10.1 - 25% slope
3. > 25.1% slope

Slope mapping for a portion of the corridor is shown in Figure 17.

Flood Plain The 100-year flood plain area for the river south of Peachtree Creek was delineated for this study by using the best available information for different parts of the Corridor. From Peachtree Creek downstream to the southern boundary of Fulton County, the source for floodplain data was the U.S. Army Corps of Engineers Mobile District, Flood Plain Information, Chattahoochee River, Buford Dam to Whitesburg, Georgia, November, 1973, and its March, 1982 Supplement. For Coweta County, Heard County and the portion of Carroll County south of Fulton, the floodplain was delineated from the Federal Emergency Management Agency's Flood Insurance Rate Maps for each of the affected counties. Only the river flood plain is considered in this study. Because the primary constraint of flood plain land - the risk of inundation by floodwaters - supersedes other factors on this typically flat land, it will be treated as a separate classification with no factor ranking. An example of flood plain mapping is shown in Figure 18.

Fig. 14
Soils

Low Erodibility

High Erodibility

Chattahoochee River

Fig. 15
Vegetation

Hardwood Forest

Mixed Forest

Coniferous Forest

Open Field

Urbanized Area

Chattahoochee River

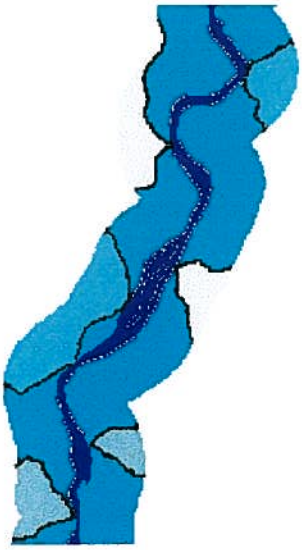


Fig. 16
Hydrology

Third Order

Second Order

First Order

Interbasin

Chattahoochee River

Fig. 17
Slope

0 - 10%

10.1 - 25%

> 25.1%

Chattahoochee River

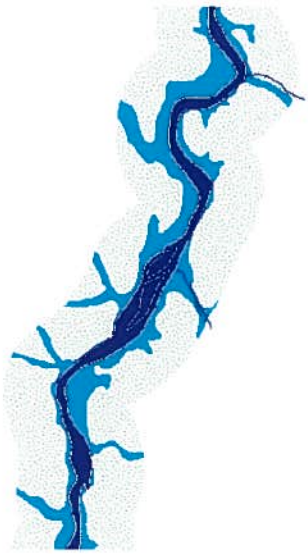


Fig. 18
Flood Plain

100-yr Flood Plain

2000 foot Corridor

Chattahoochee River

Vulnerability Rankings

To develop a ranking system for vulnerability to development, the soils, slope and vegetation factors, and each of their subcategories, must be weighted according to their relative importance in identifying land vulnerability. The scoring system used in the 1972 Corridor Study was used as a model for this analysis. The maximum scores for each factor remained the same, with Soils Vegetation and Hydrology each assigned maximum scores of 20 points, and Slope assigned a maximum score of 15 points. Combining these numbers gives a total maximum score of 75 points.

After the maximum scores are established, each factor category is assigned a number reflecting its relative vulnerability to development. The same numbers used in the 1972 Study are used for all the factors in this study, with an intermediate score added for the new Mixed Pine-Hardwood category in Vegetation. The scoring level correlates to the relative vulnerability, with the lower scores reflecting lower vulnerabilities and higher scores reflecting higher vulnerabilities.

The scoring for each factor breaks down as follows:

Soils:

Category:	Score
Low Erodibility	4
Low-to-Moderate Erodibility	8
Moderate Erodibility	12
Moderate-to-High Erodibility	16
High Erodibility	20

Vegetation:

Category:	Score
Barren or Urban Land	2
Open Field/Pasture/Successional Field	10
Pines	15
Mixed Pines and Hardwoods	18
Hardwood Forest	20

Hydrology:

Category:	Score
Third Order Basin	0
Second Order Basin	5
First Order Basin	10
Interbasin	20

Slope:

Category:	Score
0 - 10% slope	3
10.1 - 25% slope	9
> 25.1% slope	15

Composite Score

To develop the total relative vulnerability, the ranked factors are layered on one another and the composite scores are then calculated. The composite scores show the relative vulnerability of any portion of the Study Corridor to land development. The final scores range from 9 to 75 and can be grouped into categories of land vulnerability. The scores have been divided into six groupings representing six vulnerability categories, the same number of categories developed in the 1972 Corridor Study. As in 1972, the categories have been assigned letter designations from A to F, with "A" representing the least vulnerable land and "F" representing the most vulnerable:

Category	Vulnerability Designation	Composite Score Range
A	Slight	9 - 16
B		17 - 28
C		29 - 40
D		41 - 52
E		53 - 67
F	Severe	68 - 75

Impact Ranking

The second stage of the vulnerability analysis is to assess the impacts of various development types on any given piece of corridor land. This information will be used to determine what development intensities are appropriate to the land conditions found in each vulnerability category. The impacts to the land come from the amounts of paving and building (or impervious surface) required for specific uses, the amount of clearing and grading (or land disturbance) necessary to construct those uses, and the amount of human activity that is generated by those uses, including vehicular traffic and maintenance activities.

In the 1972 Corridor Study, these factors were used to assess the impacts of a range of land uses typical of the development then occurring in and near that Study Corridor. The identified uses were divided into three categories: Recreation; Housing; and Special - which included such uses as commercial, institutional, churches and schools. Each category included a range of development intensities. Each use was rated for its impacts on the land - including the amount of impervious surface, the amount of grading, the

extent of utility requirements and the amount of maintained landscaped area, as well as the estimated amount of car and foot traffic.

The impact rankings were totaled for each use, indicating its impact on the land. The uses with the highest impact were those with the highest density and the most intense human use, such as commercial development and community centers. Residential scores were concentrated in the middle of the scoring range. However, the densest residential uses - such as multi-family high-rises - were on the high end of the range, with scores dropping as density dropped. Uses such as schools and churches were also concentrated in the middle range. The lowest scores were for low-density residential (one acre lots or greater) and low-intensity recreation, such as hiking trails and nature preserves.

The impact of the amounts of impervious surface and land disturbance required for various uses were not separated out from the total impact scores in the 1972 rankings. Nevertheless, the scoring results showing that the highest impacts were associated with the uses that had the greatest amounts of land disturbance and impervious surface indicate that these factors are the greatest part of development's impact on the land.

More recent studies of impervious coverage by land use show the same correlation of impervious surface percentages and, by implication, accompanying land disturbance by land use type. Numbers developed for the 1995 Big Haynes Watershed Study in Metro Atlanta show impervious surface coverages for a range of land uses that correlate closely with the 1972 Study scores. These percentages were developed from several sources, including the national literature and the measurement of a number of project site plans for each land use. The average impervious surface associated with each use is:

Land Use	**Percent Impervious**
Major Roads	90
Commercial	85
Heavy Industry	80
Office/ Light Industrial	70
Townhouse/Apartment	48
Medium Density Single Family (0.25-0.5 ac)	26
Low-Medium Density Single Family (0.5-1.0 ac)	19
Low Density Single Family (1.0-2.0 ac)	12
Large Lot Single Family (2.0-5.0 ac)	10
Forest/Open	0.5

(Source: Big Haynes Creek Watershed Study, 1995)

The impacts resulting from development are not from impervious surfaces alone. Intense uses with large percentages of impervious surface (such as commercial or industrial) usually require flat, or nearly flat, terrain to accommodate parking areas, delivery areas

and the large one- or two-story buildings typically associated with these uses. On hilly land, such development requires large amounts of grading and soil removal. This grading and clearing can result in erosion during construction and can increase the impacts of the storm water running off the impervious areas. In hilly terrain the increased runoff leaving dense development can increase in velocity, increasing erosion and sedimentation even at a distance from the development. Such grading and clearing also destroys the existing vegetation.

In lower-density development, the roads and individual structures are usually smaller, with areas of landscaping and undisturbed land between developed areas. Development is better able to follow the land contours, with less grading and vegetation loss - and fewer resulting impacts - *if* land disturbance is limited to the areas immediately around construction sites. Trees and other existing vegetation are more easily preserved.

The lowest density development can have little impact if overall land disturbance is limited to that needed to install the impervious surfaces, as they will generally cover only a small percentage of the site area. The existing landforms are easily retained and most of the existing vegetation can be preserved.

One way of addressing the impacts of land disturbance and impervious surface is to guide development to the land best suited for the proposed densities. Intense development with large amounts of impervious surface will have fewer impacts if built on relatively flat, open land that is not in a flood plain, rather than on steep forested land. Steeper, more rolling terrain can accommodate moderate development densities, so long as grading and clearing are minimized and natural vegetation is retained. Any land use can be built in such terrain, but it may need to be on a smaller scale and offset by preserved natural areas. While low-density development can be located anywhere, it may be the best level of use on very steep wooded lands, so long as clearing, grading and impervious coverage are minimal in relation to the entire development area.

Using impervious coverage as an indicator of overall impact, development densities can be assigned to the previously developed vulnerability categories to correlate development density with an appropriate level of vulnerability. By designing developments so that their coverage and intensity are suited to their sites, the potential impact on the land can be reduced. Flat open land (except for floodplain lands) can used for large, spread out development, while more rugged, forested terrain could be used for lower density development. As an example of this correlation, the previously listed land uses are shown to indicate the typical intensity of projects that could be developed in a specific vulnerability category. This is not proposed as a restriction of any particular use to a specific category:

Land Use	Percent Impervious	Vulnerability Correlation
Major Roads	90	A
Commercial	85	A
Heavy Industry	80	A
Office/ Light Industrial	70	A - B
Townhouse/Apartment	48	B
Medium Density SF (0.25-0.5 ac)	26	C - D
Low-Medium Density SF (0.5-1.0 ac)	19	D
Low Density SF (1.0-2.0 ac)	12	E
Large Lot SF (2.0-5.0 ac)	10	E
Forest/Open	0.5	F

(Land Use Category and Percent Impervious Source: Big Haynes Creek Watershed Study, 1995)

These correlations indicate the levels of impervious surface and land disturbance that can be developed in a given vulnerability category with minimal impact to the surrounding land. Again any land use can be developed in any category, so long as it meets the maximum allocations. The category allocations are those developed in the 1972 Corridor Study, which correspond to the percentages of the previously listed uses. The allowable amounts are expressed as a percentage of category area.

Category	Maximum Percentage Land Disturbance	Maximum Percentage Impervious Surface
A	90	75
B	80	60
C	70	45
D	50	30
E	30	15
F	10	2

In this study, land disturbance is defined as any land-disturbing activity including scraping, plowing clearing (removal or disturbance of vegetation), dredging, grading, excavating or filling of land, or placement of any structure or other impervious surface, dam, obstruction or deposit. Impervious surface is defined as any paved, hardened or structural surface, regardless of material, and including but not limited to buildings, driveways, walkways, decks, streets, swimming pools, dams, tennis courts and other structures. These limits apply to any specified activity for any land use. These standards form the basic protection measure for the land and water resources of the corridor.

The effect of this analysis on the entire corridor is shown in the vulnerability maps. (Figures 19 and 20). These maps show the distribution of the vulnerability categories along the length of the corridor. The maps also show the amount of area within the 100-year flood plain.

Figure 19

Land Vulnerability Analysis (section 1)

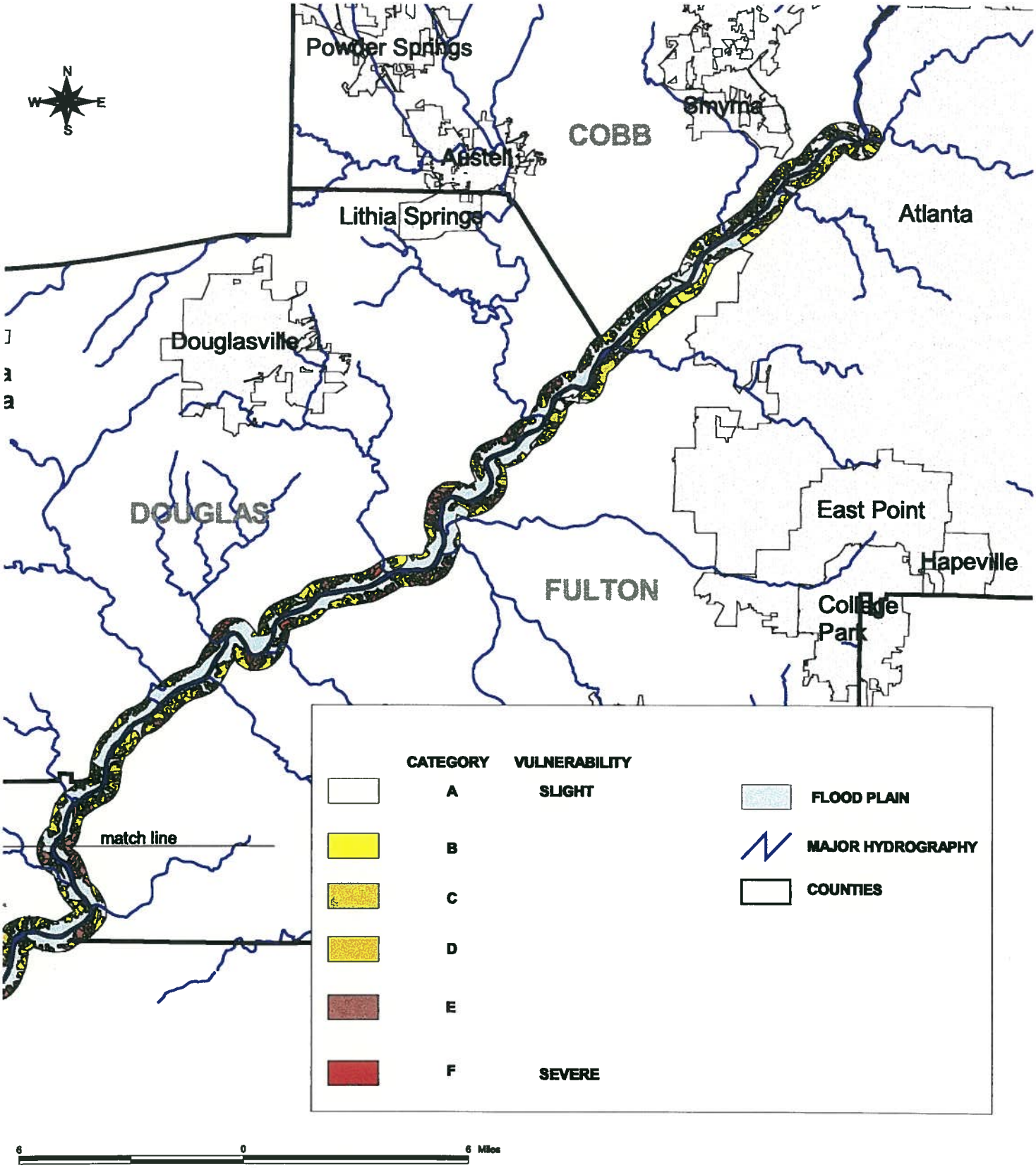
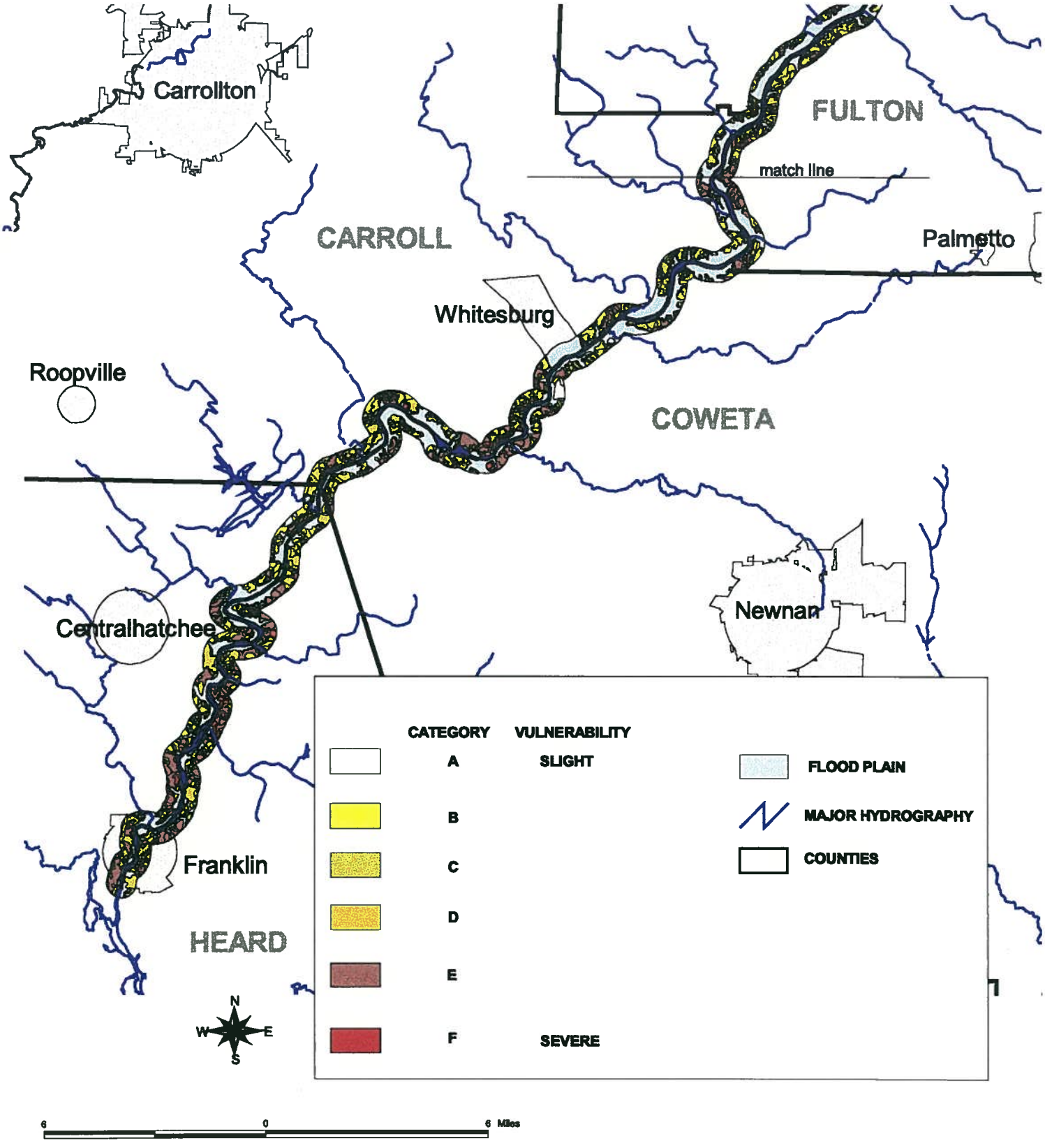


Figure 20 **Land Vulnerability Analysis (section 2)**



Scenic Views and Sites

A number of scenic areas in the Study Corridor were identified in the initial Survey by interviewing local planning officials and citizens and by researching local comprehensive plans. In early 1997, further information on scenic river views was developed from field survey trips on the river. The combined scenic view information has helped to identify seven areas where the combination of vegetation, water and landforms create unique scenic values - or potential value - along the river south of Peachtree Creek. For all seven areas, the viewsheds - those areas visible when viewing the features from points along the river and its banks - have been mapped. Any additional sites can be added to this list as they are identified. The Scenic Views and Sites maps for the corridor show the seven identified sites (Figures 21 and 22). Descriptions of the seven identified sites follow.

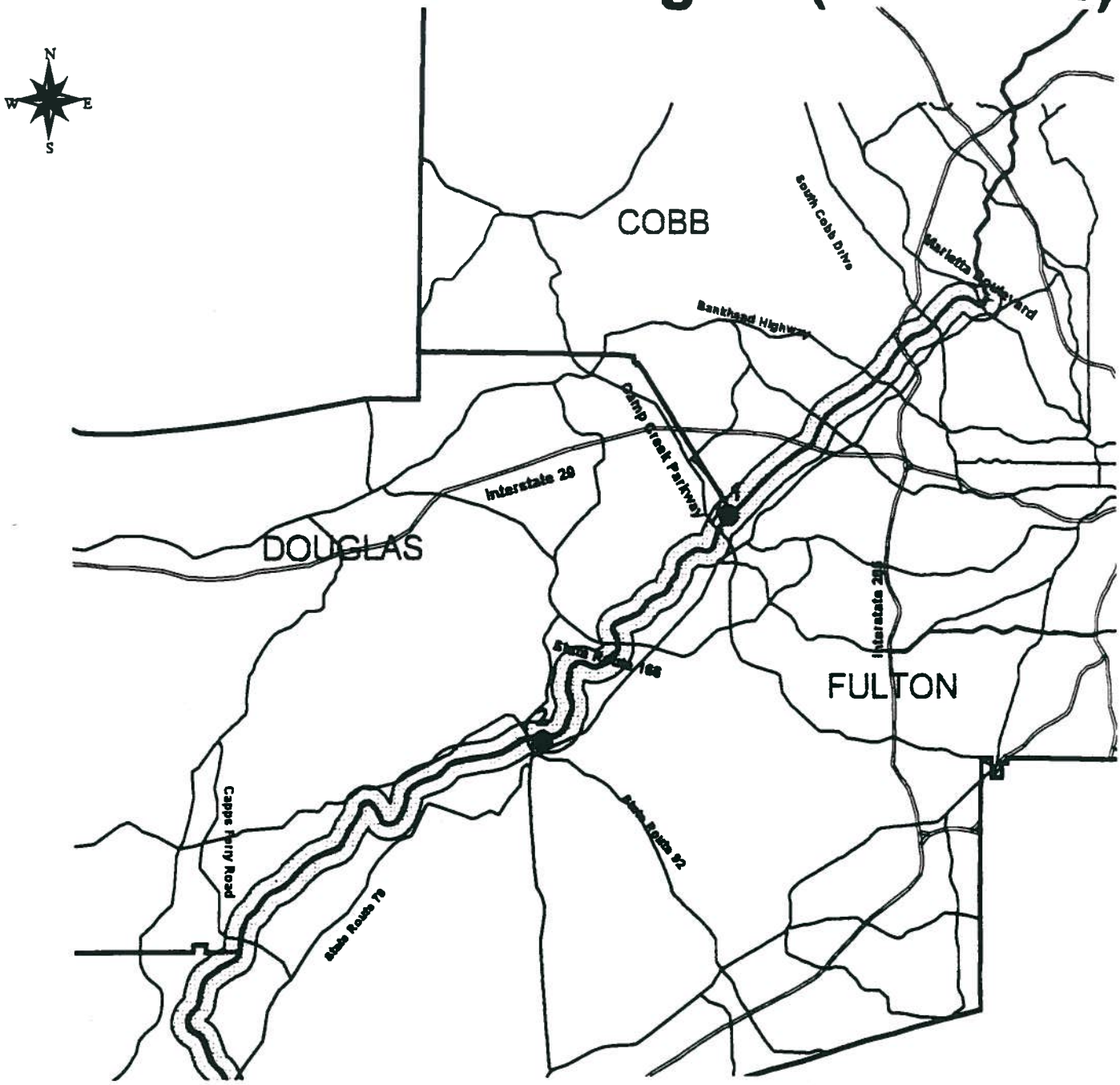
In the predominately urbanized northern portion of the Study Corridor, one dominant scenic feature, the still forested Buzzard Roost Island near the border of Cobb and Douglas Counties, has been identified (Site 1). The second identified area is along Cochran Road where it parallels the river, offering scenic views of the river and the Douglas County bank. This portion of Cochran Road is located just upstream of Highway 92 and Campbellton in Fulton County (Site 2). The third site is the McIntosh Reserve in Carroll County. The Reserve includes scenic bluffs rising up to 80 feet above the river and a series of trails along the river bank. The bluffs are not only a significant feature from the river, but lookout areas at the tops of the bluffs also provide panoramic views of the river and its valley (Site 3).

The remaining four sites are in Heard County within a few miles of each other. The first is Hilly Mill Creek as it enters the river from the east. A waterfall on the creek is visible from the river and is considered a significant natural and visual feature (Site 4). Less than a mile downstream, this scene is repeated on a smaller scale as Red Bone Creek enters the river from the east, again with a waterfall above its mouth. In addition, a bluff is located on the east bank just below the creek mouth (all are Site 5).

About another mile further downstream are the Bush Head Shoals (Site 6). This is a significant shoal area around and downstream of a cluster of islands. The entire area is a significant scenic resource as viewed from both the river and its banks. The final scenic area identified is Daniel Shoals, which are located about two miles upstream of Franklin (Site 7).

Figure 21

Scenic Views and Sights (section 1)



1. Buzzard's Roost Island
2. Cochran Road

Sites

Viewsheds

Major Highways

Limited Access Highways

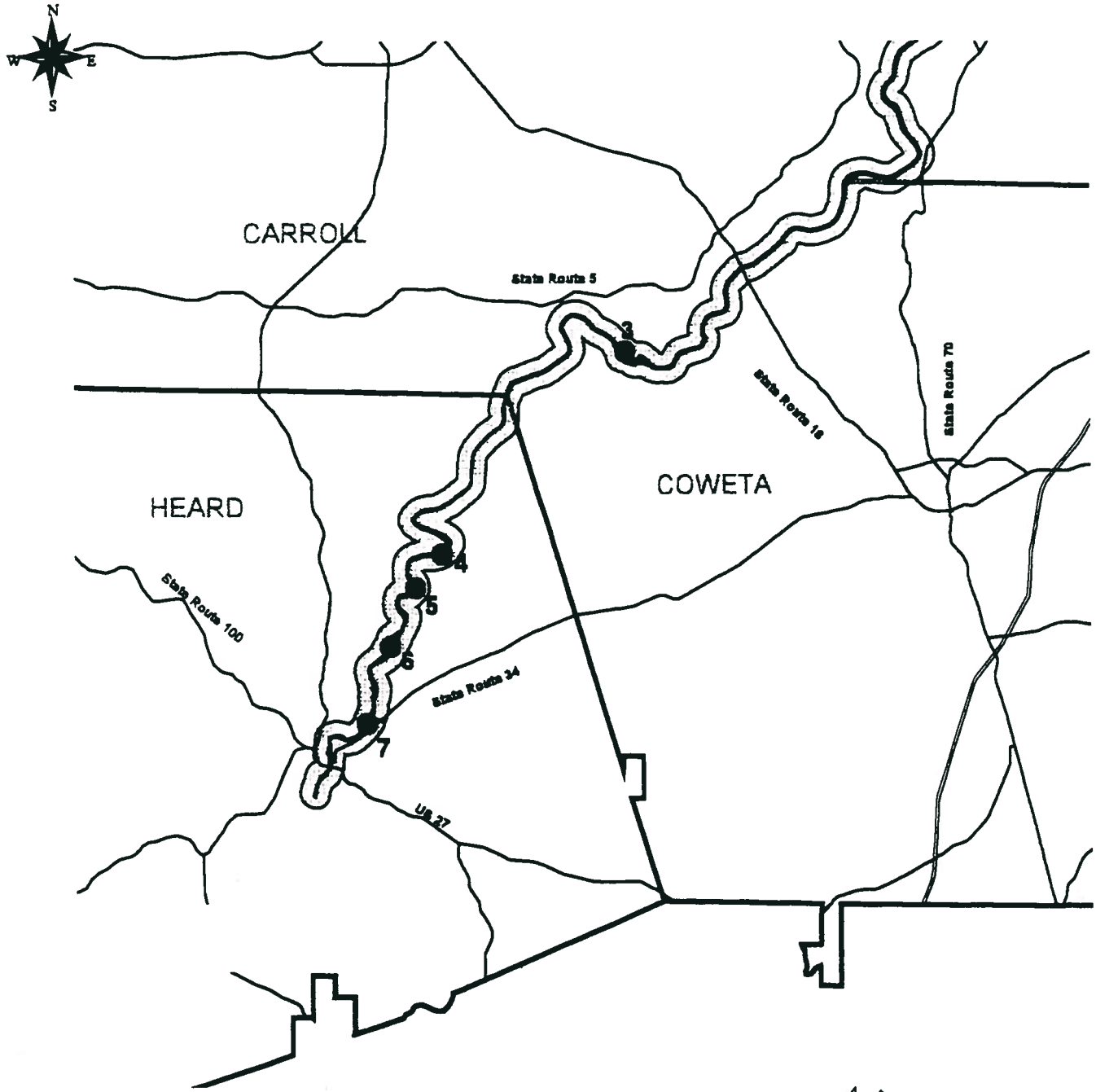
2000 Foot Corridor

Counties

5 0 5 Miles

Figure 22

Scenic Views and Sights (section 2)



3. McIntosh Bluffs
4. Hilly Mill Creek Waterfall
5. Red Bone Creek Waterfall
6. Bush Head Shoals
7. Daniel Shoals

Sites

Viewsheds

Major Highways

Limited Access Highways

2000 Foot Corridor

Counties

5 0 5 Miles

Recommended Protection Measures

The following recommendations, if implemented, form the framework of a plan to provide protection to the land and water resources of the Chattahoochee by guiding and limiting development to the most suitable areas.

Vulnerability Standards

- Adopt the Vulnerability Categories developed in this study with the accompanying limits on land disturbance and impervious surface for all land in the 2000-foot corridor.
- Require that all land-disturbing activity conform to the land disturbance and impervious surface limits for each category on the subject property.
- Verify conformance through review and certification of all land-disturbing activity.

Buffer Zone Standards

Buffer zones along watercourses provide a last line of protection from the impacts of development. An undisturbed natural vegetative buffer provides runoff filtering, bank protection and stabilization and shading of water habitats. Impervious surface setbacks provide extra protection by allowing open space between the bank and development to slow runoff. These setbacks also protect the root systems of buffer vegetation from grading, excavating, the movement of heavy equipment and other construction activities, as well as from the effects of any impervious surfaces installed next to the undisturbed buffer. In order to maximize protection of the corridor water resources, the following standards are recommended:

- Establish buffers that leave vegetation in its natural, undisturbed state for fifty (50) horizontal feet on both banks of the Chattahoochee River and for thirty-five feet on both banks of all tributary streams, as measured from the edge of the water, within the corridor except for unpaved, ungraded footpaths, designated public access points, river or stream transportation crossings, public wastewater treatment plant outfall structures and utility line crossings.
- Do not allow impervious surfaces or structures within, on or over any land within one-hundred-fifty (150) horizontal feet from either bank of the Chattahoochee River, as measured from the edge of the water, except for unpaved, ungraded footpaths, designated public access points, river or stream transportation crossings, public wastewater treatment plant outfall structures and water supply and sewerage manholes that are designed and built at grade.
- Utility line river crossings should be coordinated to either share easements or have abutting easements to minimize the areas impacted by the crossings. Existing cleared areas, rights-of-way and abandoned easements should be used whenever possible.

All new transportation river crossings in the Atlanta Region's portion of the corridor must be in the Atlanta Region's Regional Transportation Plan (RTP).

Flood Plain Standards

The risk of flooding, and of flood plain development increasing the risk and severity of flooding, are constraints that supersede any other existing conditions on flood plain land. Therefore, separate recommendations are provided for the river flood plain.

- Limit all land disturbance and impervious surface within the 100-year flood plain of the Chattahoochee River to "E" vulnerability category standards: 30 percent land disturbance and 15 percent impervious surface.
- Cut and fill operations in the 100-year flood plain shall not cause any net increase in the surrounding natural flood elevation or impede natural flood flows either on the development site or in adjacent or surrounding areas.
- No structures or land uses shall be permitted in the 100-year flood plain that can significantly impede the natural flood flow or reduce flood storage volume.
- All fill volume in the 100-year flood plain must be balanced by an equal amount of cut within the flood plain portion of the development property. Both cut and fill must be within the allowable flood plain land disturbance limits. Cut volume below the seasonal high ground water elevation shall not be included as compensation. Fill above the flood elevation shall not require compensatory cuts.
- Within the 100-year and 500-year flood plains, limit all structures except for bridges to a height of no greater than 35 feet above the natural, ungraded land surface. Fill will be counted as part of the structure height. Where other height limits also apply, the lower limit shall take precedence.

Scenic Views And Areas:

Viewshed designation should be considered for sites and areas that have been determined to be special and unique and for which there is some level of public commitment.

- Identify viewsheds for unique and special scenic areas by developing sightlines from all desired viewing points (river, riverbanks, bluff tops, etc.) to the scenic features. The area between the feature and the viewing points is the primary viewshed. Beyond the feature is the extended viewshed, which includes background features (trees, hills, ridges) that are visible behind the identified scenic feature from the identified viewing points. Two approaches can be used in identifying viewshed areas for protection:

    1. Conduct specific sightline studies for each identified viewshed. This would allow identification of those areas in which structures and development may intrude on views or block views.
    2. Designate general viewshed areas that would indicate general areas of likely intrusion, but would not consider specific terrain or vegetation.

- In either case, incentives can be used to promote protection through redesign or relocation of structures in the viewshed. One possible incentive using the proposed vulnerability factors would be to allow transfers of all or part of the land disturbance and/or impervious surface allowances from one vulnerability category to another category or categories expressly to protect the scenic viewshed. Transfers could be used either for those areas identified in this Study or any that may be identified in the future by the affected local government. This could also be used to protect other significant areas and sites, including unique natural features, archeological sites, historic sites and endangered or threatened plant species or wildlife habitat.