

**WATERSHED ASSESSMENT  
ETOWAH RIVER HEADWATERS  
HUC 031501040101**

This watershed assessment is a Plan to Project analysis which means the process of applying the Forest Plan to a site specific project location. This assessment will become a key reference source for NEPA compliance in the future. This is not a decision document. No projects are decided within this document, only opportunities to bring specific locations into plan compliance. All will require site specific analysis and further on the ground inventories.

**EXISTING CONDITION**

**Identification of 5<sup>th</sup> level Hydrologic Unit (HU)**

The 6<sup>th</sup>-level HUC evaluated in this assessment is part of the Upper Etowah River 5<sup>th</sup>-level HUC (# 0315010401). The Upper Etowah River 5<sup>th</sup> level HUC includes the upper headwaters of the Etowah River from Black Mountain Gap to Fryingpan Gap to Hawk Mountain, south to the Forest proclamation boundary. The watershed encompasses 114,017 acres, approximately 26,814 acres (24%) of which are National Forest lands. There are approximately 104 miles of perennial streams within the HU. There are 7-6<sup>th</sup>-level HUC's within the Upper Etowah River 5<sup>th</sup>-level HUC (Table 1, Map B-1).

**Table 1. Total acres and NF acres for each 6<sup>th</sup>-level HUC in the Upper Etowah River 5<sup>th</sup>-level HUC (0315010401).**

6 <sup>th</sup> level HUCs	Major Stream	Total acres	NF acres	% NF Acres
031501040101	Etowah River	15,221	12,842	84%
031501040102	Jones Creek	9,105	8,797	97%
031501040103	Nimblewill Creek	10,280	5,175	50%
031501040104	Etowah River	17,895	0	0%
031501040105	Etowah River	19,516	0	0%
031501040106	Shoal Creek	23,807	0	0%
031501040107	Etowah River	18,193	0	0%
<b>TOTAL</b>		<b>114,017</b>	<b>26,814</b>	<b>24%</b>

Condition of 5<sup>th</sup> Level HU

The following description of the condition of the Upper Etowah River HU is taken from the FEIS for the Land and Resource Management Plan for the Chattahoochee-Oconee NFs (2004).

- Approximately 23 % of the watershed is in National Forest ownership with the remaining 77 % in private or other governmental ownership (State, County).

- There are no streams in this HU listed as sediment impaired by Georgia Environmental Protection Agency (EPD) under Section 303(d) of the Clean Water Act.
- Camp Frank D. Merrill operates a Water System within the HU, with a permitted withdrawal of 0.5 MGD from the Etowah River.
- The FEIS predicted a 3.27 percent increase in sediment for period 1 (first decade) in the HU due to FS management activities for the selected plan alternative.
- The Watershed Condition Rank (WCR) is a measure that characterizes the condition of 5<sup>th</sup> level HUCs with respect to current and future sediment load increases. The weighted average WCR for the Upper Etowah River HU fell within the excellent range, indicating that the probability (or potential) is low for adverse effects to aquatic species.

### **Priority of 6<sup>th</sup> Level HU**

The 6<sup>th</sup> level HUC included in this assessment is the Etowah River Headwaters (HUC #031501040101). This watershed was selected due to the presence of the Federally Endangered Etowah Darter (*Etheostoma etowhae*) in the upper Etowah River mainstem. As discussed above, there are no EDP listed impaired stream segments on National Forest lands in this watershed. This watershed also was chosen for the assessment based on the opportunities to address to varying degrees all of the Chief's 4 threats including 1) fire and fuels, 2) invasive species, 3) loss of open space, and 4) unmanaged recreation.

### **Management Direction**

The acres by Management Prescription (MRx) for this watershed are shown in Table 2. Approximately 71 % of the watershed is allocated to MRx 9.H (Management, Maintenance, and Restoration of Plant Associations to Their Ecological Potential). This MRx has an emphasis on the restoration of historical plant associations and their ecological dynamics to ecologically appropriate locations. Approximately 10% of the watershed is in MRx 9.A.1 (Source Water Protection Watersheds), which consists of the lands upstream of the water system for Camp Merrill. The primary emphasis in this MRx is to maintain healthy watersheds that provide water for withdrawal for treatment and municipal use. MRx 4.A (Appalachian Trail Scenic Corridor) also comprises about 10 % of the watershed. Management emphasis in this MRx is to protect the A.T. experience, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the A.T. passes. Approximately 7 % of the watershed is allocated to MRx 6.B. (Areas Managed to Restore/Maintain Old-Growth Characteristics). These lands have an emphasis of first restoration then maintenance of old-growth forests for their associated wildlife, botanical, recreational, scientific, educational, cultural, and spiritual values. The remaining land in the watershed (144 acres) consists of the U.S Army's buildings, support and training facilities located within the Camp Frank Merrill compound (MRx 5.D. Military Use Areas).(Table 2, Map B-2)

**Table 2. Acres by Management Prescription for the Etowah River Headwaters HUC**

<b>Prescription</b>	<b>Prescription Name</b>	<b>Total Acres</b>
3.C	National Recreation Areas	11.14
4.A	Appalachian Trail Corridor	1299.54
4.F.1	Scenic and Wildlife Management Areas	0.62
5.D	Military Use Areas	143.75
6.B	Areas Managed to Restore or Maintain Old Growth Characteristics	823.13
8.A.1	Mid-to-Late Successional Forest Emphasis	12.43
9.A.1	Source Water Protection Watersheds	1343.28
9.H	Management, Maintenance, and Restoration of Plant Associations	9149.51

**Ecological Unit Descriptions**

LTA's: The acres within each LTA are shown in Table X. Approximately 83% of the land within the Upper Etowah Watershed HUC (0315401401) is Forest Service system land. All of the LTS are in the Blue Ridge Mountains Section and the Southern Blue Ridge Mountains subsection. Detailed descriptions of the LTA's are included in Appendix A. (Map B-3)

**Table 3. Land Type Association by Section a Subsection**

<b>LTA#</b>	<b>SECTION</b>	<b>SUBSECTION</b>	<b>LTA NAME</b>
M221Dc018	Blue Ridge Mountains	Southern Blue Ridge Mountains	Chestatee Foothills
M221Dc037	Blue Ridge Mountains	Southern Blue Ridge Mountains	Suches

**Table 4. Acres by Land Type Association for the Upper Etowah River HUC 6<sup>th</sup> level**

<b>Upper Etowah Watershed (HUC 0315010401) Land Type Association by FS and Total Acres</b>		
<b>Map Unit</b>	<b>FS Acres</b>	<b>Total Acres</b>
M221Dc037	4495.00	6187.07
M221Dc018	8229.00	9033.95
Totals	12,724.00	15221.02

Geology: The Upper Etowah River watershed is comprised of approximately 48% Metagraywacke/Mica Schist and 45% Mica Shist/Gniess. (Map B-4)

**Table 5. Acres by Rock Type for the Upper Etowah River 6<sup>th</sup> level HUC.**

Soils: The Upper Etowah River watershed (USFS land and private combined) contains 19% TdG (Tallapoosa Soils) as the predominate soil type. The next predominant soil type is AEF (Ashe and Edneycille stony loams). It comprises approximately 11% of the watershed. (See Table 6 for complete listing).

<b>Upper Etowah Watershed Geology Acres (0315010401)</b>		
<b>GEOLOGY CODE</b>	<b>DESCRIPTION</b>	<b>Total Acres</b>
um	Ultramafic Rocks Undifferentiated	611.85
pm3a	Metagraywacke/Mica Schist-Quartzite/Amphibolite	7222.51
bg1	Biotite Gneiss	483.10
pms3	Mica Schist/Gneiss	6790.60

Upper Etowah Soil Types and Acreages for Total Watershed Area (0315010401)		
Map Unit Symbol	Acres	Percent of Total
AEE	109.1606	0.7195
AEF	1698.356	11.1938
AcG	384.2043	2.5323
AwB	0.6528	0.0043
BvF	1.6584	0.0109
CaC	186.5033	1.2292
CeE	0.5583	0.0037
ChF	42.0902	0.2774
ChG	3.5394	0.0233
Con	29.2412	0.1927
EPD	83.095	0.5477
EPE	382.8143	2.5231
EPF	1579.9062	10.4131
FaC	16.4025	0.1081
FaE	277.4001	1.8283
FbE2	1.851	0.0122
HIC	24.6027	0.1622
HIE	1186.0614	7.8173
HJC3	8.8176	0.0581
HJE3	22.6695	0.1494
HLC	5.7699	0.0380
HLD	19.6176	0.1293
HLF	18.0539	0.1190
HSC	31.136	0.2052
HSD	212.2081	1.3987
HSF	166.1474	1.0951
HaF	0.1799	0.0012
MCE	10.2082	0.0673
MCG	38.2025	0.2518
PVT	2505.3316	16.5125
Psf	48.1809	0.3176
RaE	5.9259	0.0391
RoC	6.0351	0.0398
SnF	70.3039	0.4634
Sta	22.3491	0.1473
TIC	61.2488	0.4037
TID	1140.9755	7.5201
TIF	102.0005	0.6723
TbE	115.9733	0.7644
TdG	2936.0348	19.3513
Tic	7.0041	0.0462
TmE	649.8754	4.2833
TmF	113.265	0.7465
ToC	273.6043	1.8033
UNK	14.6876	0.0968
W	4.0461	0.0267
WgC	15.3763	0.1013
WgD	488.3365	3.2186
WgF	50.6538	0.3339
<b>Totals</b>	<b>15172.3168</b>	<b>100.0000</b>

Table 6. Total Acres by Soil Type for the Upper Etowah River 6<sup>th</sup> level HUC.

## **Major Forest Communities/Forest Cover**

Table X lists the Forest Type distribution based on the GIS stands layer. Significant disparity exists between the District CISC data and the GIS stands layer. The predominate forest type within the watershed is FT 53 White Pine – Red Oak – Hickory. There are approximately 390 acres of white pine plantations and 340 acres of loblolly plantations that are off site. (Map B-5)

**Table 7 Forest Type Distribution for the Upper Etowah River Watershed**

<b>FRTY Code</b>	<b>Forest Type</b>	<b>Acres</b>	<b># of Stands</b>	<b>% of Total</b>
3	White Pine	1183.9	40	
9	White Pine – Cove Hard Wood	80.1	2	
10	White Pine – Upland Hardwood	533.9	16	
12	Shortleaf Pine – Oak	423.2	20	
16	Virginia Pine – Oak	621.3	22	
31	Loblolly Pine	344.4	14	
32	Shortleaf Pine	633.7	25	
33	Virginia Pine	732.4	28	
41	Cove Hardwoods – White Pine – Hemlock	244.8	9	
42	Upland Hardwoods – White Pine	1123.6	37	
45	Chestnut/Scarlet Oak – Yellow Pine	1117.9	31	
46		209	4	
47	White Oak – Black Oak – Yellow Pine	556.5	22	
48	Northern Red Oak – Hickory – Yellow Pine	2.7	2	
50	Yellow Poplar	145.6	9	
52	Chestnut Oak	222.4	12	
53	White Oak – Red Oak – Hickory	3224.6	127	
54		11.6	1	
56	Yellow Poplar – White Oak – Red Oak	1233.7	48	
59	Scarlet Oak	19.8	1	

## **Rare Communities**

The only known rare community in this watershed is the small canebrake (3-5acres) along the Etowah River near Hightower Bridge. This area is located in the Carder Fields, an old farm site managed for wildlife habitat. A portion of the fields near the canebrake is not currently being mowed, in order to allow for the expansion of the canebrake. Although no other significant canebrakes have been identified, others may exist in this watershed.

Several additional rare communities have the potential to occur within this watershed. This includes Appalachian Highlands Bogs, Fens, Seeps, and Ponds (specifically Seeps) and Basic Mesic Forests. If present, these communities will be identified at the project-level and appropriate protective or enhancement measures will be implemented.

## **Successional Stage Habitats**

Table 8 and Figure 1 shows the acres by seral stage for the watershed. Approximately 67 percent of this watershed is in mid-to-late successional conditions with an additional 5 percent in stands that meet minimum old-growth age. There currently are no stands in early successional conditions in this watershed.

**Table 8. Summary of Seral Stage Distribution for the Etowah River Headwaters HUC.**

Seral Code	Description	Total	
		Acres	%
	Non-Forested	11.2	0.1
E	Early successional	0.0	0
S	Sapling - Pole	3388.1	26.4
M	Mid successional	2309.5	18.0
L	Late successional	6341.9	49.4
O	Old growth	624.8	4.9
	Other*	165.6	1.3

\* Newly Acquired Lands

**Figure 1**

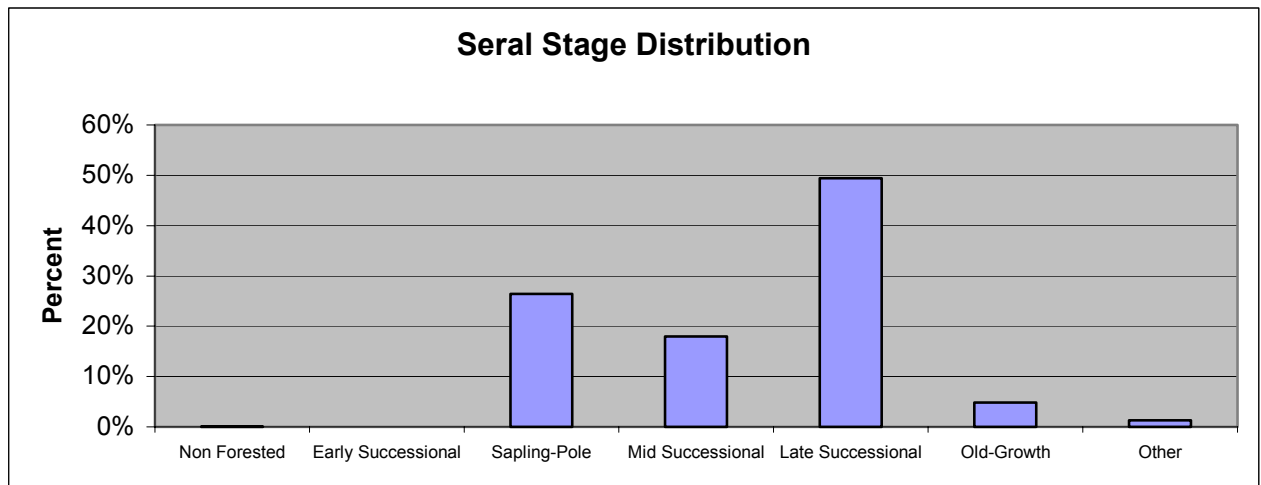


Table 9 shows the early successional habitat objectives for each MRx in the watershed. MRx 5.D and 6.B. have no objectives for the creation of early successional habitat. The creation of early successional forest habitat is limited to 4 percent of the forest acres for both MRx 4.A and 9.A.1 and is limited to 4-10% in MRx 9.H. For the watershed, early successional habitat (ESH) objectives range from 366 to 916 acres, with a mid point of 641 acres. As discussed above, there currently are no acres of existing ESH in the watershed.

**Table 9. Early Successional Habitat (ESH) objectives by Management Rx for the Etowah River Headwaters 6<sup>th</sup>-level HUC.**

Mgt Rx	ESH Objective	Existing Acres of ESH	Minimum Acres of ESH	Mid-Point Acres of ESH	Maximum Acres of ESH
4.A	0-4%	0	0	26	53
5.D	No Objective	0	0	0	0
6.B	No Objective	0	0	0	0
9.A.1	0-4%	0	0	27	54
9.H	4-10%	0	366	641	916
<b>Total</b>		<b>0</b>	<b>366</b>	<b>694</b>	<b>1023</b>

Approximately 870 acres of this watershed is allocated to old-growth or old-growth compatible MRx (MRx 6.B). This is approximately 7 % of the watershed. As a result, no additional acres need to be designated as small old-growth blocks since the required 5% for this watershed has already been met (FW-044).

Approximately 625 acres within this watershed is in stands that meet the minimum old-growth age. Prior to any vegetation management projects that could negatively affect old-growth characteristics, sufficient data will be collected to determine if stands meet the four defining criterion for existing old-growth. If so, then priority will be given to these stands in satisfying the small old-growth block objective (FW-046).

**Table 10. Small Old-Growth Block Requirements by Management Rx for the Etowah River Headwaters 6<sup>th</sup>-level HUC.**

Mgt Rx	Total Acres	Acres of Small Old-Growth Blocks Required By Plan (5%)	Acres Allocated to Old-Growth Compatible MRx	Additional Acres to be Designated as Small Old-Growth Blocks
4.A	1,322	66	0	0
5.D	144	7	0	0
6.B	870	44	870	0
9.A.1	1,343	67	0	0
9.H	9,162	458	0	0
<b>Total</b>	<b>12,842</b>	<b>642</b>	<b>870</b>	<b>0</b>

### **Special Habitat Attributes**

The major streams in this watershed include the Etowah River, Montgomery Creek, Ward Creek, Black Branch, Dunn Branch, Bull Creek, Edmunston Creek, and Two Run Creek. There are approximately 41 miles of trout streams in this watershed, all of which are classified as primary trout streams (Table 11). This includes only those streams large enough to support trout. There also are a large number of small headwater streams that likely are too small to support trout. Total stream mileage in this watershed is approximately 64 miles.

**Table 11. Miles of Primary Trout Streams and Total Stream Miles for the Etowah River Headwaters 6<sup>th</sup>-level HUC.**

	National Forest	Private	Total
Primary Trout Stream	29.07	12.20	<b>41.27</b>
<b>Total Streams</b>	<b>50.59</b>	<b>13.11</b>	<b>63.70</b>

There are approximately 1838 acres of riparian corridor habitat in this watershed, including 1486 acres on National Forest lands (Table 12). Over ¾ of the riparian corridor habitat on National Forest lands are in mid-to late successional conditions (Table 13). A small percentage is in non-forested conditions. This includes the riparian corridor habitat within the old farm fields of the Carder Tract on the Etowah River. This tract was actively farmed prior to Forest Service acquisition. Fields were cleared down to the stream edge and as a result, portions of the forested riparian area along this stream are relatively narrow. The Forest Service has worked to reestablish the riparian vegetation, including a canebrake, by limiting activities near the stream. While portions of the riparian area contain mature trees, some segments still consist of relatively and young trees, brush, and cane.



**Table 12. Acres of Riparian Corridor Habitat for the Etowah River Headwaters 6<sup>th</sup>-level HUC.**

	<b>Total</b>
National Forest	1486.0
Private	351.6
<b>Total</b>	<b>1837.5</b>

**Table 13. Acres of Riparian Corridor by Seral Stage for the Etowah River Headwaters 6<sup>th</sup>-level HUC.**

<b>Seral Code</b>	<b>Description</b>	<b>Total</b>	
		<b>Acres</b>	<b>%</b>
	Non-Forested	4.4	0.3
E	Early successional	0	0
S	Sapling - Pole	247.1	16.6
M	Mid successional	373.3	25.1
L	Late successional	742.6	50.0
O	Old growth	85.0	5.7
	Other *	33.6	2.3
	<b>TOTAL</b>	<b>1486.0</b>	

\* Newly Acquired Lands

### **Threatened or Endangered Species**

PETS and Locally Rare species with known occurrences in this watershed is shown in Table 14.

**Table 14. PETS and Locally Rare Species with known occurrences in the Etowah River Headwaters 6<sup>th</sup>- level HUC.**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Status</b>	<b>Location</b>
<i>Etheostoma etowahae</i>	Etowah Darter	E	NF
<i>Etheostoma brevirostrum</i>	Holiday Darter	S	NF
<i>Neotoma floridana haematorea</i>	Southern Appalachian Woodrat	LR	NF
<i>Percina palmaris</i>	Bronze Darter	LR	NF
<i>Juncus gymnocarpus</i>	Naked-fruit Rush	LR	NF
<i>Carex manhartii</i>	Manhart Sedge	LR	NF

The only Federally listed species in this watershed is the Federally Endangered Etowah Darter. This species is endemic to the upper Etowah River system in north Georgia, where it is restricted to the upper Etowah mainstem and two tributaries, Long Swamp and Amicalola Creeks. It lives in warm and cool, medium and large creek or small rivers, approximately 15 to 30 meters in width, and of moderate or high gradient with rocky bottoms. It is found in relatively shallow riffles, with large gravel, cobble, and small boulder substrates. The sites having the greatest abundance of this species have clear water and relatively little silt in the riffles.

In this watershed, the Etowah Darter is known to occur in approximately 2.25 miles of the Etowah River, downstream of the Montgomery Creek Bridge. It is not known from any of the Etowah River tributaries in this watershed.

The only known Sensitive species in this watershed is the Holiday Darter, which is known from the Etowah River mainstem. Other Sensitive species with the potential to occur in this watershed include Rafineque’s Big-eared Bat (*Corynorhinus rafinesquii*), Diana Fritillary Butterfly (*Speyeria diana*), Margarita River Skimmer (*Macromia margarita*), Appalachian Snaketail (*Ophiogomphus incurvatus*), Edmunds Snaketail (*Ophiogomphus edmundo*), and Georgia Beloneurian Stonefly (*Beloneuria georgiana*). There also are several Locally Rare plants and animals with known occurrences within this watershed.

**Demand Species**

Demand species including white-tailed deer, wild turkey, black bear, and gray squirrel are common within this watershed. Gamebirds such as bobwhite quail and ruffed grouse are less common due to the limited quantity of suitable habitat. Preferred quail habitat includes abandoned fields and brushy areas such as wood margins, hedgerows, thickets, and open woods. Grouse use a variety of forest habitats and successional stages, but early successional forests are a key component that often is limiting.

Approximately 6068 acres of this watershed is within the Blue Ridge WMA. This 38,900 acre WMA is managed cooperatively with Georgia DNR, Wildlife Resources Division. There are approximately 40 acres of permanent wildlife openings in this watershed (Table 15). Approximately 22 acres are on the WMA and are managed by GA DNR personnel. Three openings totaling 18 acres are outside of the WMA and are managed by USFS personnel. This includes the Carder Fields (10 acres), Moss Hill Opening #1 (4 acres) and the East Cane Creek Linear (4 acres).

**Table 15. Existing Permanent Wildlife Openings in the Etowah River Headwaters 6<sup>th</sup>- level HUC.**

<b>Location</b>	<b># of Openings</b>	<b>Acres</b>
In Blue Ridge WMA	19	21.7
Outside of WMA	3	18.0
<b>Total</b>	<b>22</b>	<b>39.7</b>

The majority of the watershed and the majority of the existing openings are in MRx 9.H (Table16). In this MRx, the expansion of existing openings and/or the creation of new openings are permitted (Permanent opening Option 3). In MRx 4.A, 6B and 9.A.1, existing openings can be maintained but expansion of existing openings and/or the creation of new openings are not permitted (Permanent Opening Option 3). There are no existing openings in the portion of the watershed allocated to MRx 4.A. but several existing openings are present in the portion allocated to in MRx 6.B and 9.A.1. There also is 1 existing opening in the Camp Merrill Compound (MRx 5.D.). Although the Forest Plan does not provide any specific direction, continued maintenance of this opening is expected.

**Table 16. Acres and Number of Existing Openings by Management Prescription in the Etowah River Headwaters 6<sup>th</sup>- level HUC.**

<b>Prescription</b>	<b>Prescription Name</b>	<b>Total Acres</b>	<b>Permanent* Opening Option</b>	<b>Acres of Existing Openings</b>	<b>Number of Existing Openings</b>
4.A	Appalachian Trail Scenic Corridor	1,322	2	0	0
5.D	Military Use Areas (Camp Merrill)	144	4	0.4	1
6.B	Areas Managed to Restore/Maintain Old-Growth Characteristics	870	2	2.1	2
9.A.1	Source Water Protection Watersheds	1,343	2	5.1	3
9.H	Management, Maintenance, and Restoration of Plant Associations to Their Ecological Potential	9,162	3	32.1	16
<b>Total</b>		<b>12,842</b>		<b>39.7</b>	<b>22</b>

\*see text for explanation

### **Migratory Birds**

Since 1992, 7 breeding bird survey points have been established in this watershed. Three of these points were only surveyed for the initial years of these surveys (1992 and 1994). The number of survey points was drastically reduced in 1996 when the Forest adopted the Region 8 landbird strategy. From 1996 to 1999, 4 points were surveyed annually. Two of these points were discontinued after 1999 due to personnel changes. There now are only 2 points that are part of the Forests permanent points that are surveyed each year. Year to year trends from these few points are of limited value. However a summary of all birds reported from all points in the watershed is useful in characterizing bird communities in the watershed.

Table 16 summarizes all available point count data for this watershed. 308 individuals of 42 species have been recorded in the 14 years of surveys. All avian Forest MIS have been recorded with the exception of Field Sparrow and Swainson's warbler.

Species associated with early successional conditions such as Prairie Warbler, Chestnut-sided warbler, field sparrow, and blue-winged warbler generally are uncommon in this watershed, reflecting the limited availability of early successional habitats. Birds associated with mature forests, forest interiors, and snags generally are more abundant.

**Table 17. Total Count of Birds Recorded from Breeding Bird Point Counts in the Etowah River Headwaters 6th- level HUC, 1992-2004.**

Species	Count
American Crow	43
Red-eyed Vireo	42
Black-throated Green Warbler	24
Hooded Warbler (MIS)	24
Pileated Woodpecker (MIS)	21
Scarlet Tanager (MIS)	17
Eastern Tufted Titmouse	16
Ovenbird (MIS)	12
Indigo Bunting	11
Blue Jay	10
Black-capped Chickadee	8
Carolina Chickadee	7
Northern Cardinal	7
Carolina Wren	6
Pine Warbler (MIS)	6
Yellow-billed Cuckoo	6
Acadian Flycatcher (MIS)	4
Eastern Towhee	4
Blue-winged Warbler	3
Red-tailed Hawk	3
White-breasted Nuthatch	3
Wood Thrush (MIS)	3

Species	Count
Black-throated Blue Warbler	2
Blue-headed Vireo	2
Broad-winged Hawk	2
Eastern Wood-Pewee	2
Hairy Woodpecker	2
Mourning Dove	2
Ruffed Grouse	2
Worm-eating Warbler	2
Black-and-white Warbler	1
Blue-gray Gnatcatcher	1
Canada Warbler	1
Chestnut-sided Warbler (MIS)	1
Dark-eyed Junco	1
Great Crested Flycatcher	1
Louisiana Waterthrush	1
Northern (Yellow-shafted) Flicker	1
Prairie Warbler (MIS)	1
Red-headed Woodpecker	1
Ruby-throated Hummingbird	1
Yellow-throated Warbler	1
	308

## **Forest Health**

**Table 18. Modeled acres of host type for Southern Pine Beetle, Oak Decline, and Hemlock Woolly Adelgid in the Upper Etowah River 6<sup>th</sup> level HUC.**

<b>Southern Pine Beetle Acres</b>	<b>Oak Decline Acres</b>	<b>Hemlock Wolly Adelgid Acres</b>
10087.1064	6563.0367	12597.3674
2755.0424	6279.1121	244.7813

Table 18 above shows the acres of stands in susceptible host types for SPB, Oak Decline, and Hemlock Woolly Adelgid based on the GIS stands layer. (Maps B-6, B-7, B-8)

**Southern Pine Beetle:** The risk of Southern Pine Beetle attacks is high in this watershed. There are approximately 2755 acres of host pine types in these watersheds. Some of these stands have damage from the last outbreak of SPB.

**Oak Decline:** There are approximately 6279 acres of oak timber types that are susceptible to oak decline in these watersheds. At this time there does not appear to be a problem with oak decline in these stands.

**Hemlock Woolly Adelgid:** There are approximately 245 acres of hemlock stands typed as being susceptible to Hemlock Woolly Adelgid.

**Existing Projects:** There are not any existing projects in this watershed.

## **Recreation**

### **Hunting and Fishing:**

**Developed Recreation Areas:** There are no develop Recreation Areas in this watershed.

**Dispersed Recreation Areas:** Several dispersed campsites are situated throughout the watershed. Most of these as located near creeks or are associated with Forest Service system roads.

**Unofficial Recreation Use:** Illegal OHV/ATV use occurs throughout the watershed on National Forest land. This use is usually associated with closed timber haul roads, old woods roads and user created trails connecting the Whissenhunt ATV trail.

**Trails:** There are currently three trail systems that cross into the Upper Etowah River watershed. The Appalachian Trail runs along the northern most boundary of the watershed. (Map B-9)

Table 19: Trails by use type and miles within the Upper Etowah River 6<sup>th</sup> level HUC

Trail Name	Miles	Type
Appalachian Trail	3.43	Hiking
Bull Mountain Trail System	4.18	Horse
Whissenhunt	.95	OHV

### Scenery

**Scenery Management Conditions:** National Forest System lands within the Upper Etowah River watershed have a range of Scenic Integrity Objectives (Table 20, Map B-10).

Table 20. Acres by Scenic Class in the Upper Etowah River 6<sup>th</sup> level HUC

Scenic Class	Acres
0	2512.3012
1	3805.3259
2	7132.2932
3	1464.9334
4	198.6063
5	71.9382

### Heritage Resources

#### Existing Conditions

After reviewing the current and existing heritage information on file accumulated over the last 29 years, there is a wealth of information on the cultural resources within this watershed. Approximately 1,736 acres within these compartments have been previously surveyed or reviewed in 17 different reports as listed below. The previous surveys have been for past timber sales, roads, land exchanges, SPB salvage, prescribed burning, recreation area improvements, and trails. A total of 46 sites are known to exist in the Etowah Watershed on the National Forest only. Twenty of these are recommended for protection and avoidance from proposed activities.

Report # Name	Total Acres	Total # Sites	Sites to Protect	Cemeteries	Interpretive Opportunities
97-02-19	540	3	3	0	none
90GA03-01	5	0	0	0	none
86GA03I01	60	0	0	0	none
78Ce563,564R-2	24	0	0	0	none
80Ce565R-1	1	2	0	0	none

84GA03S03	207	6	1	0	none
98-02-11	16	0	0	0	none
78CE587-3	Missing report				
78CE587-2	Missing report				
92GA03-01	349	2	0	0	none
78CE587-4	131	7	3		None
98-02-10					none
83GA03N03	20	1	1	0	CCC camp, currently State Owned 4-H camp
78CE586S05	168	24	10	0	none
98-02-13	24	0	0	0	none
86GA03I01	60	0	unknown		none
78CE587-4	131	7	0		none

### Site Protection Needs

Of the 46 known sites in the watershed, 20 are identified as needing protection. These will be identified and addressed when projects are proposed in those locations. There is one known cemetery on National Forest that is within the watershed. Twenty sites are recommended as not eligible for the National Register, and there are 6 sites where the eligibility is unknown. There are 13 sites not listed above that have been identified or marked on the maps but have not been officially recorded or included into a report.

### Needs and Opportunities

None of these known sites are conducive to interpretation at this time. Additional testing is needed on many of these sites to determine National Register eligibility. The six sites that have not been fully recorded and assessed will be completed in the future when projects are proposed in those areas.

The GIS survey data and site data needs to be updated to the current year this project is funded. The Atlas maps were updated during this assessment and all current data was added to those maps. All new and old site locations also need to be updated into GIS.

### Special Uses

There are 9 existing Special Use Authorizations within this watershed (see table 21, Map B-11)

**Table 21. Existing Special Use Authorizations in the Upper Etowah River 6<sup>th</sup> level HUC**

Number	Permittee	Type Use
1	Amicolola EMC	Power lines
2	Garfield Rider	Water Use
3	Tina Davis	Road/garden
4	Ridge Creek/Hidden Lake Academy	Outfitter Guide
5	Army	Camp Merrill
6	John Chester	Water Use
7	Kathleen Heasley	Road/Gate
8	Ben LaChance	Road/Gate
9	University of Georgia	Experiment

### **Fire Management**

Since 1988, there have been 26 wildfires totaling approximately 1,097 acres within the watershed. Two areas have been prescribed burned totaling approximately 100 acres. (See table 22, Map B-12).

**Table 22. Wildfire and Prescribe Burns since 1988 in the Upper Etowah River 6<sup>th</sup> level HUC**

WILDFIRES				
NAME	ACRES	DATE	CAUSE	NEED IN GIS
Hawk Mtn. Fire	0.20	01/28/88	Army	X
Hawk Mtn. Fire	6.70	12/05/89	Army	X
Pinn #1 Fire	0.25	03/11/96	Army	X
Hidden Lake	0.25	09/05/97	Arson	X
Merrill #1	5.00	12/01/98	Army	X
Merrill #2	1.00	12/01/98	Army	X
Merrill #3	1.00	12/01/98	Army	X
Merrill #4	1.00	12/01/98	Army	X
Merrill #5	1.00	12/01/98	Army	X
Turner Creek	0.20	09/05/99	Arson	X
Borsodi	3.00	11/11/99	Arson	X
Check Station	0.50	09/25/99	Arson	X
Christmas Fire	4.00	12/25/99	Misc.	X
Winding Stair	0.20	04/23/99	Lighting	X
Turner Creek	0.25	09/25/99	Arson	X
Winding Stair Gap	16.00	01/28/01	Campfire	X
Montgomery Creek	0.50	03/20/01	Army	X
Coppermine	3.70	11/25/02	Arson	X
Frying Pan Gap (Border Line)	3.50	12/29/02	Arson	X
Camp Merrill #1	1.00	11/13/03	Army	X
Camp Merrill #2	0.10	11/13/03	Army	X
P - Gap (Border)	127.20	12/01/02	Arson	
Etowah	21.20	11/26/02	Misc.	
Pungeon Gap	802.00	12/02/01	Arson	
Cooper Creek	88.00	11/14/01	Army	X
Conner Mtn. Fire	5.00	03/11/05	Army	
<b>RX Burn</b>				
	<b>Acres</b>	<b>Date</b>	<b>Reason</b>	<b>Need in GIS</b>



	50	1987	Site Prep	X
	50	1988	Site Prep	X

## Roads

The following roads are located within the Upper Etowah River Watershed. Each road has a number assigned to it. (Table 23, Map B-13). Currently there are no roads projects planned within the watershed outside of routine maintenance.

The GIS analysis revealed a number of problems with the existing roads coverage. Several system roads are missing or are misidentified and the majority of the non-system roads are missing.

**Table 23. Road miles by level within the Upper Etowah River 6<sup>th</sup> level HUC.**

Road Number	NAME	Operation Maintenance	Length
97	CAMPBELL MTN	3 - SUITABLE FOR PASSENGER CARS	0.042301
28B	MOSS HILL	2 - HIGH CLEARANCE VEHICLES	0.101586
97	CAMPBELL MTN	3 - SUITABLE FOR PASSENGER CARS	0.393009
28B	MOSS HILL	2 - HIGH CLEARANCE VEHICLES	0.143501
98	DUNN BRANCH	2 - HIGH CLEARANCE VEHICLES	1.125708
28B	MOSS HILL	2 - HIGH CLEARANCE VEHICLES	0.052604
28B	MOSS HILL	2 - HIGH CLEARANCE VEHICLES	0.021377
28F	UPPER NIMBLEWILL	2 - HIGH CLEARANCE VEHICLES	0.982059
28B	MOSS HILL	2 - HIGH CLEARANCE VEHICLES	0.077806
28-1	NIMBLEWILL	3 - SUITABLE FOR PASSENGER CARS	0.034472
28G	BLACK BRANCH	2 - HIGH CLEARANCE VEHICLES	2.26714
28-1	NIMBLEWILL	3 - SUITABLE FOR PASSENGER CARS	0.195842
243	EAST CANE CR	2 - HIGH CLEARANCE VEHICLES	2.204813
77	WINDING STAIR GAP	2 - HIGH CLEARANCE VEHICLES	0.08367
28-1	NIMBLEWILL	3 - SUITABLE FOR PASSENGER CARS	2.497888
141	MONTGOMERY CREEK	2 - HIGH CLEARANCE VEHICLES	0.635313
28-1	NIMBLEWILL	3 - SUITABLE FOR PASSENGER CARS	0.179413
880	TWO RUN CREEK	2 - HIGH CLEARANCE VEHICLES	1.159576
141	MONTGOMERY CREEK	2 - HIGH CLEARANCE VEHICLES	5.062891
141A	MONTGOMERY SPUR	2 - HIGH CLEARANCE VEHICLES	0.551863
77	WINDING STAIR GAP	2 - HIGH CLEARANCE VEHICLES	0.25586
879	WARD CK	1 - BASIC CUSTODIAL CARE (CLOSED)	0.773439
878	HIDDEN ACRES	1 - BASIC CUSTODIAL CARE (CLOSED)	2.177955
142	HIGHTOWER CREEK	2 - HIGH CLEARANCE VEHICLES	2.474712
42A	HAWK MOUNTAIN	2 - HIGH CLEARANCE VEHICLES	0.016128
80	COOPERS GAP	3 - SUITABLE FOR PASSENGER CARS	2.796309
15	GADDISTOWN	3 - SUITABLE FOR PASSENGER CARS	0.005329
		<b>TOTAL</b>	26.31256

## **OPPORTUNITIES/NEEDS**

### **Rare Communities**

- **Manage Existing Canebrake** - Develop a project to maintain and enhance the existing canebrake at the Carder Fields on the Etowah River. Consider thinning or removal of white pines and walnuts adjoining the existing canebrake to allow expansion. Consider further modification of management regime in existing fields to allow for further expansion of the canebrake. Consider allocating this site to MRx 9.F. (Rare Communities).
- **Identify Additional Canebrakes** – Forest Plan modeling indicated that there are approximately 209 acres of potential canebrake restoration in this watershed (see Major Forest Communities Section above). This includes bottomland hardwood-yellow pine stands (FT 46) on Montgomery Creek, Edmunston Creek and Black Branch. These and other riparian areas in the watershed should be surveyed to evaluate restoration potential, identify other existing canebrakes, and develop appropriate management strategy to restore and enhance these rare communities.
- **Rare Community Identification** - There are no known rare communities within this watershed. However any rare communities present will be identified at the project-level and appropriate protective or enhancement measures will be implemented.

**Successional Stage Habitats - Creation of Early Successional Habitat** – To meet Forest Plan Objectives for Early Successional Habitat create approximately 25-50 acres of ESH in the portion of this watershed allocated to MRx 9.A.1 and approximately 350-900 acres in the portion of this watershed allocated to MRx 9.H, for a total of 375-950 acres.

**Special Habitat Attributes - Watershed Restoration Needs** – Develop watershed restoration projects to address needs identified for closure and revegetation of old roads, illegal ATV trails, dispersed campsites and other problem areas. See roads and recreation section for specific details. Projects will result in improved habitat conditions for the Etowah Darter and other aquatic species.

### **Threatened or Endangered Species**

- **Aquatic habitat protection and enhancement** - Due to the presence of the Federally listed Etowah Darter, aquatic habitat protection and enhancement must be a primary focus in this watershed. Protection of water quality should be a key consideration in the development of vegetation management activities. Actions such as limiting stream crossings and the adherence to Forest Plan Riparian

Corridor standards and BMP's will assist in achieving these results. Proposed watershed restoration projects, and targeted road and trail maintenance activities discussed elsewhere all would contribute to improved water quality.

- 
- Project-Level Inventories- Prior to any ground disturbing activities; project-level inventories for PETS species will be conducted based on the direction in Forest Service Manual Supplement R-8-2600-2. Effects on federally listed species will be avoided. For Sensitive species, mitigating measures will be implemented to maintain habitat for these species on the Forest, and to prevent future listing under the Endangered Species Act. These strategies will assist in avoiding cumulative effects on PETS species and their habitats.

### **Demand Species**

- East Cane Creek Linear- The East Cane Creek Linear is in poor condition due to heavy shading by the adjoining trees. Develop a project to daylight the linear using a small timber sale and replant it to a clover/grass mixture. The daylighting operation also will contribute to meeting the ESH habitat objectives for the watershed.
- WMA Opening Expansion - At the request of Georgia DNR, develop a project to provide an additional 5 acres of wildlife openings in the Penn Cove portion of the Blue Ridge WMA.

**Migratory Birds** - The habitat improvement needs for migratory birds; especially MIS species are addressed in the vegetation management/restoration projects listed above (Major Forest Communities/Forest Cover, Successional Stage Habitats). The creation of early successional habitats will improve conditions for species such as prairie warbler and chestnut-sided warblers. Thinning and other canopy gap treatments in oak and mesic hardwood forests will benefit species such as hooded warblers and scarlet tanagers. The development of woodland conditions will provide additional habitat for species such as the field sparrow. Shortleaf pine restoration treatments will enhance conditions for species such as the pine warbler. Designation of old-growth blocks and the application of forest-wide standards will ensure continued habitat availability for interior forest species such as the ovenbird and wood thrush, riparian associated species such as the Acadian flycatcher, and snag-dependent species such as the pileated woodpecker.

**CISC Data** - The number one need for this watershed is to have the stand forest types and stand conditions classes updated. The data for a lot of the stands in these compartments is wrong.

**Off site Species** – There are about 391 acres of white pine plantations and 344 acres of loblolly pine plantations that are off site.

**Canopy Gap Treatments** – According to the data used in compiling the canopy gap restoration needs there are 6094 acres that meet this need.

## Restoration

- **Shortleaf Pine** – Available data shows 1336 acres that are in need of restoring to shortleaf.
- 
- There are 23 acres available for restoring Table Mountain Pine.

## APPENDIX A – LTA DESCRIPTION

Land Type Association Description for Map Unit:

**M221Dc018 – Etowah River**

**General Description/Location:** Southern ‘face’ of Blue Ridge from Burnt Mt. near Jasper, GA northeastward to Big Buzzard Mt. near Turner’s Corners on US129 north of Cleveland, GA.

**Hierarchy:** 200 Humid Temperate Domain; 220 Hot Continental Division; M221 Central Appalachian Broadleaf-Coniferous Forest Meadow Province; M221D Blue Ridge Mountains Section; M221Dc Southern Blue Ridge Mountains Subsection.

**Distinguishing Features:** Prominent southern face of the Blue Ridge rising above the Southern Appalachian Piedmont Section to the south; receives higher rainfall than either the adjacent Piedmont or the interior of the Blue Ridge to the north.

**I. PRIMARY DESIGN CRITERIA**

**Geology**

- A. Geologic rock types: Primarily micas schist but with an area of metagraywacke from Cedar Ridge on US 60 westward to vicinity of Hawk Mt. and with some biotite gneiss south of Suches.
- B. Geomorphic process: Variable metamorphosis between high and moderate grade of a variety of rocks, ‘mountain building’ uplift with associated with collision of Jefferson and Inner Piedmont terrains along the Brevard Fault to the south, subsequent erosion and mass wasting.
- C. Surficial geology: cba – bouldery colluvium

**Topography**

- a. Landforms: Rugged mountain crest with steep to very steep upper side slopes, narrow, descending side ridges with a generally north-south orientation; strong dissection with numerous perennial streams in narrow V-shaped valleys. The Suches/Sarah area is an exception to this general pattern by being on the north side of the Blue Ridge divide and in being less rugged with a broad valley bottom along the headwaters of the Toccoa River.
- b. Slope gradient: Highly variable ranging from 5-percent to over 70-percent for extremes but typically about 25 to 45%.
- c. Elevation (feet, range of elevation or relief): 1800 to 3700', total relief 1900 feet but average relief approximately 1400.

**Local Climate**

- a. Average annual precipitation (in): Approximately 75 inches, based on Suches, Neal’s Gap, Helen, and Cleveland stations.
- b. Seasonality of precipitation: Rainfall amounts are greatest in winter and early spring, typically the months of December through about mid-March. A mild spring dry period usually begins just before greenup and lasts until just after. Lowest rainfall months are typically October-November - the ‘fall fire season’. Summer rainfall is typically afternoon thunderstorms aided in their development by updrafts along the Blue Ridge Front.

- c. Winter/summer mean temperatures: The average annual temperature is interpolated from Daholnega, Helen, and Blairsville stations to be approximately 61 degrees Fahrenheit.
- d. Growing season length (days): There are approximately 195 to 200 days between the last killing frost in spring and the first killing frost in the fall. Lower elevations have the longer period and higher elevations have the shorter one.

## II. ASSOCIATED CRITERIA

### Soil series or associations

Porters, Cowee, Evard, Chestnut, and Saunook.

### **Vegetation associations**

- a. Potential: Appalachian oak forest (Kuckler);
- b. Historic: oak-chestnut (Braun); as early as the 1700's there may have been grass-herbaceous communities created by burning.
- c. Existing: In the highest elevations the existing forest cover is primarily oak-hickory with minor amounts of pine. As one descends in elevation, pine increases and the cover becomes one of pine-oak. The forest sensitive witch alder and Blue Ridge bindweed are known to occur in this LTA.

### **Aquatic Resources**

- I. Aquatic systems and types: Riverine with little or no associated palustrine except in Suches area. Primary stream type is small perennial headwaters streams of high gradient.
- II. Channel conditions/characteristics: Predominately steep gradient, entrenched channel streams with low sinuosity and step/pool type flow. The Suches/Saraha area is an exception with streams of moderate gradient, entrenchment, and sinuosity with riffle-dominated channels and infrequent pools. Large waterfalls occur on some southward flowing streams. Examples are Amicalola Falls - the highest in Georgia - and Cochran Falls.
- III. Flow/runoff characteristics: Stream response to rainfall is to increase flows slowly or only moderately rapidly. Highest flow months are January through April. Lowest flow months are July through October.
- IV. Drainage density patterns: Density of all stream types is 10mi/mi<sup>2</sup> in a dendritic pattern.
- V. Water chemistry and quality: Water is typically slightly acidic, has low buffering capacity, and low inorganic nutrient content. Percent of major stream miles not fully supporting State-designated beneficial uses is moderate (11-20%). [note - this may be an over-statement because of much of this LTA being in the Etowah River drainage which has been impaired by mining downstream from this LTA.]

### **Cultural Influences**

This LTA is in an area not known to have had Cherokee or Creek towns in the proto-historic or historic periods. The nearest Cherokee towns were in the area of Helen, Sautee, and Nacoochee. However, the local place name of “Horse Range” is suggestive of the Indian trading era when traders had pastures near their trading locations for pack stock. After white occupation there was limited clearing for farming due to rugged terrain. Areas of gentle terrain, such as the Suches\Sarah area, flat areas on the Blue Ridge Divide crest, and lower elevation slopes approaching the Piedmont were cleared for either field or pasture. Ayers and Ashe (cited in Wilson, 1902) reported that fires were more common in the southern end of the Appalachians as one neared the Piedmont. In addition, the large scale map prepared from their report shows areas of non-forest land along this Blue Ridge Front extending from the gentle toe slopes all the way up the steep side slopes to the crest in this area, probably caused by hot upslope fire runs from below. There was extensive industrial logging between about 1900 and 1930. With Forest Service acquisition came stock exclusion and fire protection about 1930. The Appalachian Trail now runs along the Blue Ridge Divide crest the entire length of the LTA. Since the 1930's construction of Forest Service roads and low intensity timber harvest have been the main direct influences.

### **Fauna**

Representative mammals are white-tailed deer, black bear, raccoon, gray squirrel, gray fox, possum, skunk, and rabbit. The ruffed grouse, bobwhite quail, wild turkey and mourning dove are game birds found but habitat for quail and dove is very localized and limited. Representative Neotropical migratory and resident landbirds include summer tanager, cardinal, tufted titmouse, wood thrush, red-eyed vireo, Carolina wren, blue-gray gnatcatcher, Carolina chickadee, northern junco, red-tailed hawk, the yellow-rumped warbler and the Canada warbler. The herptofauna for this LTA include eastern box turtle, common garter snake, timber rattlesnake, green anole, the Blue Ridge two-lined salamander, and the wood frog. Game fish species are brook, brown, and rainbow trout.

### **Relationship to other LTAs**

More rugged terrain and higher elevations than Chesatee Foothills LTA to the south, higher rainfall than Toccoa River LTA to the north but lower rainfall than South Slope LTA to the northeast.

### **Natural Processes**

Lifting of warm, moist Gulf air masses along the Blue Ridge ‘front’ drops high rainfall within this LTA. Summer droughts seem to be less prevalent and less severe. For example 1954 is the driest year on record for Georgia with some areas

A-3

receiving as little as 38-percent of their annual average rainfall but this area received about 83-percent of normal. On the other hand, tornadoes, snowfalls, and ice storms also appear to ‘track’ parallel to this mountainous crest due to wind



flow resistance and cooling with air mass rise. Recent examples were a severe tornado just south of Woody Gap on Highway 60 and another on Waters Creek.

### **M221Dc037 – Chestatee Foothills**

**General Description/Location:** From Amicalola Falls State Park northeast to US 129 at Town Creek (just south of Big Buzzard Mountain). Contains a portion of the 'Dahlongega Plateau' or 'Dahlongega Upland'.

**Hierarchy:** 200 Humid Temperate Domain; 220 Hot Continental Division; M221 Central Appalachian Broadleaf-Coniferous Forest Meadow Province; M221D Blue Ridge Mountains Section; M221Dc Southern Blue Ridge Mountains Subsection.

**Distinguishing Features:** Lower slopes of the Blue Ridge Mountains adjacent to the Piedmont; recognition as being in the Blue Ridge based on higher rainfall near the mountains and the extension of what are generally thought of as Appalachian tree species, such as hemlock and white pine, out into the Piedmont - especially on sheltered slopes and along streams.

## I. PRIMARY DESIGN CRITERIA

### **Geology**

- a. Geologic rock types: Primarily mica schist/gneiss but with an area of amphibolite between Etowah River and Cane Creek
- b. Geomorphic process: High-grade metamorphism of various rocks followed by uplift but much more gentle than the Blue Ridge Crest zone. Erosion from runoff gathering in the mountains subsequently dissected the surface.
- c. Surficial geology: slb - micaceous saprolite; ssc - micaceous metagraywacke, and cba - granitic bouldery colluvium.

### **Topography**

- a. Landforms: Narrow ridges of moderate relief trending southward with moderately steep sideslopes and narrow valleys. Relief and elevations decreasing slowly and gradually to the south.
- b. Slope gradient: Estimated to range between 10 and 40-percent with greatest land area probably occurring in the 20 to 30-percent range.
- c. Elevation (feet, range of elevation or relief): Elevations typically vary from 1400' to 1900' or an average relief of 500 feet. Scattered higher 'knobs' such as Collins Mt., Three Sisters Mt., and Campbell Mountain reach higher elevations and greater relief.

A-4

### **Local Climate**

Rainfall decreases dramatically southward from the edge of the Blue Ridge into the Piedmont. However there is no sharp 'line' of demarcation between the Mountains and the Piedmont, rather a gradient several miles wide.

- a. Average annual precipitation (in): Approximately 64". based on Dahlonega, Dawsonville, and Cleveland stations.
- b. Seasonality of precipitation: Wettest period is typically January through early March, followed by a brief dry spell in late March and April about 'greenup'. Summer months are intermediate and most rain occurs as afternoon thunderstorms. Lowest rainfall is in autumn, usually in the months of October and November.
- c. Winter/summer mean temperatures: The average annual temperature is approximately 62° Fahrenheit.
- d. Growing season length (days): There are approximately 205 days between killing frosts.

## II. ASSOCIATED CRITERIA

### Soil series or associations

Hayesville, Tallapoosa, Wickham, Edneyville, Porters; mesic soil temperature regime.

### **Vegetation associations**

- a. Potential: Oak-pine (Kuchler);.
- b. Historic: Oak-pine-hickory (Plummer).
- c. Existing: Pine-oak with the representation of pine significantly increased by land use history. This area is transitional (that is, an ecotone) between Blue Ridge and Piedmont and existing vegetation has a significant proportion of white pine. Hemlock also comes down the valley bottoms to at least 1700 feet elevation.

### **Aquatic Resources**

- a. Aquatic systems and types: Riverine - the drainage is into the Chattahoochee River system in the form of numerous perennial streams draining from the mountains. Principal streams include Town Creek, Yahoola Creek, Etowah River, and Cochran Creek. These have headwaters in the mountains but flow through this LTA.
- b. Channel conditions/characteristics: Streams are moderate in gradient, entrenchment, and sinuosity with riffle-dominated channels and few pools.
- c. Flow/runoff characteristics: Stream rise after rain is either moderately rapid or slow and they subside similarly. Highest flow months are typically January

A-5

through April. Lowest flow months are July through October.

- d. Drainage density patterns: Density of all stream types is 10mi/mi<sup>2</sup> in a dendritic pattern.
- e. Water chemistry and quality: Water is typically slightly acidic, low in inorganic nutrients, and with a moderate to high neutralizing capacity. From 11 to 20-percent of major stream miles do not fully support State-designated

beneficial uses. Much of this substandard water quality is the result of mercury and other elements in the Etowah River from gold mining days.

### **Cultural Influences**

Ridges and valley bottoms with areas of gentle slope have been, or are still, cleared for fields, home sites, or pasture. Between 1838 and 1930 this area was burned and grazed by free-ranging livestock and probably before that as well. Land clearing for fields and cutting for house construction, farm building construction, fencing, firewood, and other miscellaneous uses probably removed more wood than the industrial logging era. On remaining woodland, the logging era - approximately 1880 to 1920 - probably saw this area cutover several times for different products. Fire and stock exclusion along with agricultural field reversion resulted in abundant reproduction of 'pioneer' species such as yellow pines and yellow poplar, but these are gradually being replaced by white pine, holly, hemlock, and oaks. Forest industry owns some land in this LTA and manages it for pine timber.

### **Fauna**

Representative mammals are white-tailed deer, black bear, raccoon, gray squirrel, fox squirrel and cottontail rabbit. The ruffed grouse, bobwhite quail, wild turkey and mourning dove are the game birds found. Representative neotropical migratory and resident landbirds include summer tanager, cardinal, tufted titmouse, wood thrush, red-eyed vireo, Carolina wren, blue-gray gnatcatcher, Carolina chickadee, northern junco, red-tailed hawk, the yellow-rumped warbler and the Canada warbler. The herptofauna includes eastern box turtle, common garter snake, timber rattlesnake, green anole and the Blue Ridge two-lined salamander.

### **Relationship to other LTAs**

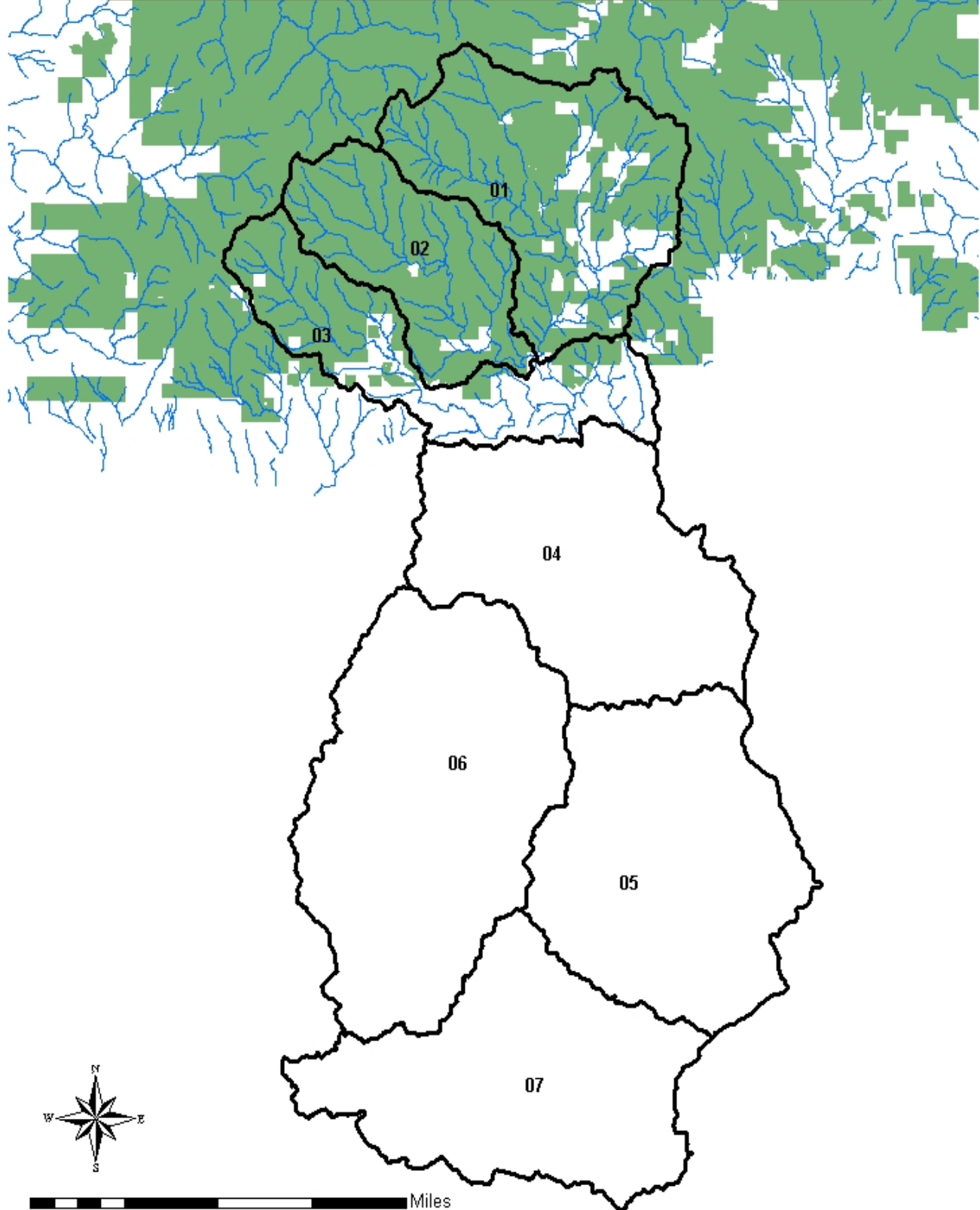
No other LTA is comparable in landform and climate and geology.

### **Natural Processes**

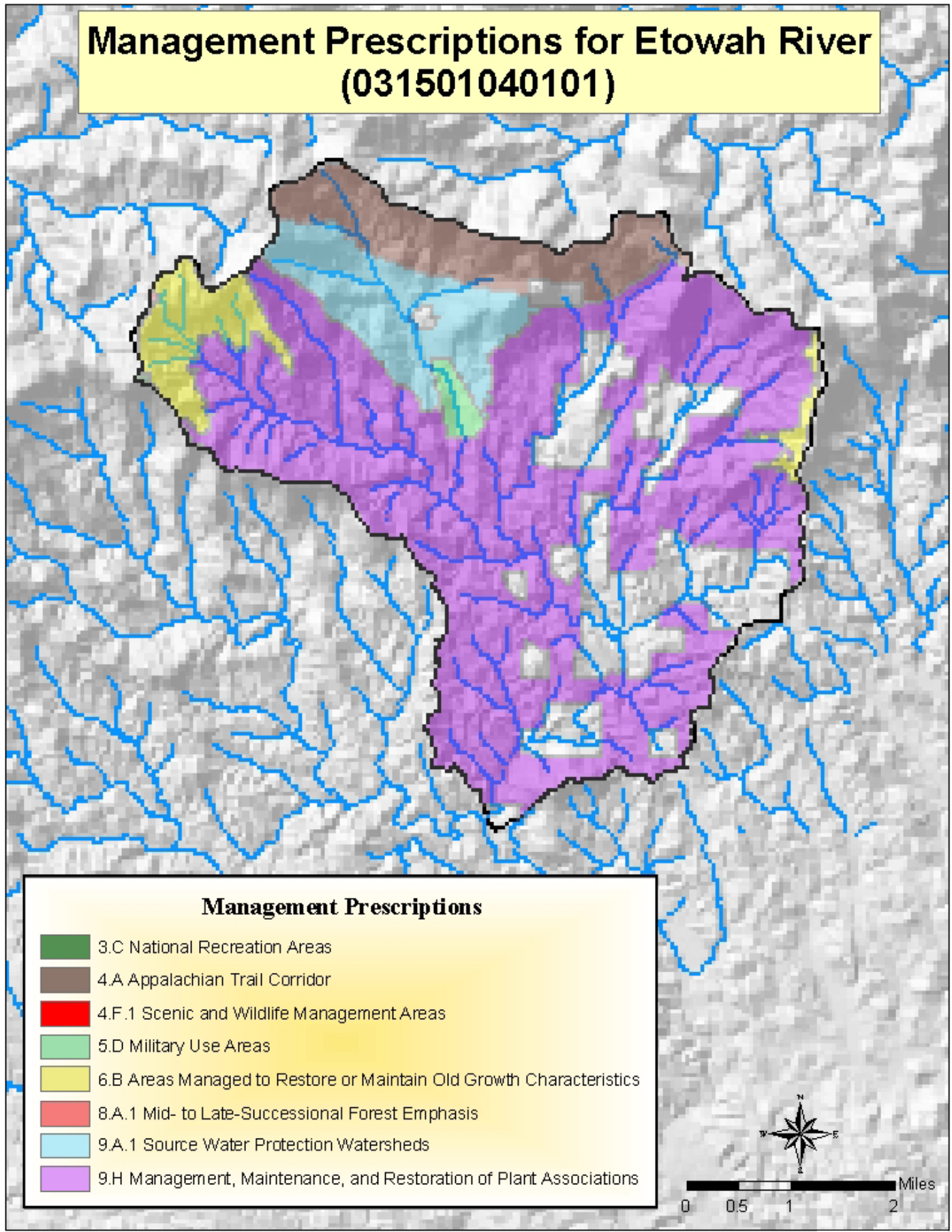
Known natural disturbance agents include tornadoes, snow and ice storms, and periodic severe drought. Beaver flooding also occurs where their dams are not destroyed. Southern pine beetle periodically attacks the southern yellow pines.

## APPENDIX B - MAPS

# HUCs within Upper Etowah Watershed (0315010401)

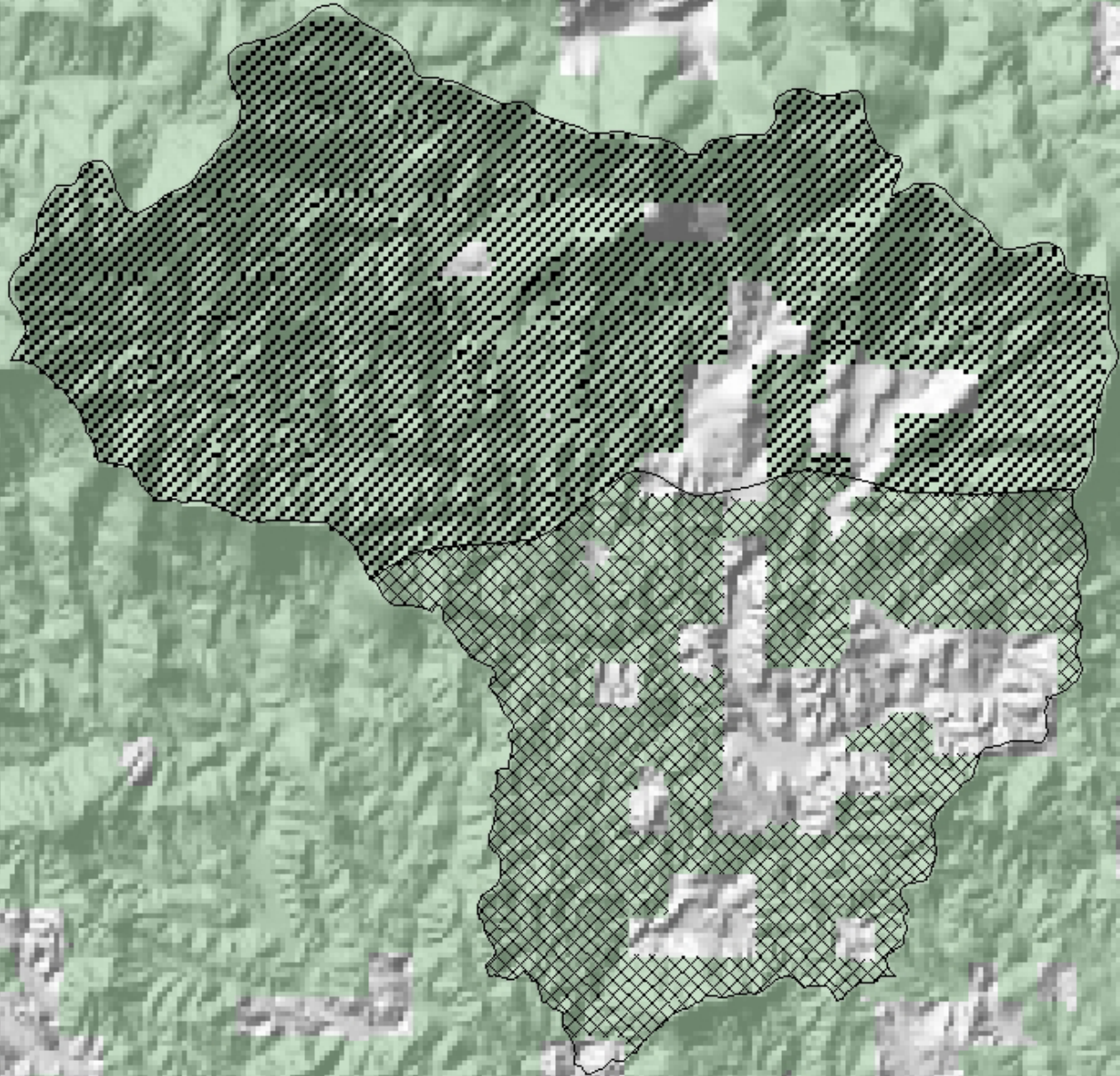


# Management Prescriptions for Etowah River (031501040101)






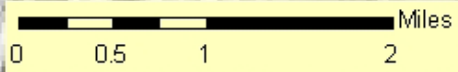


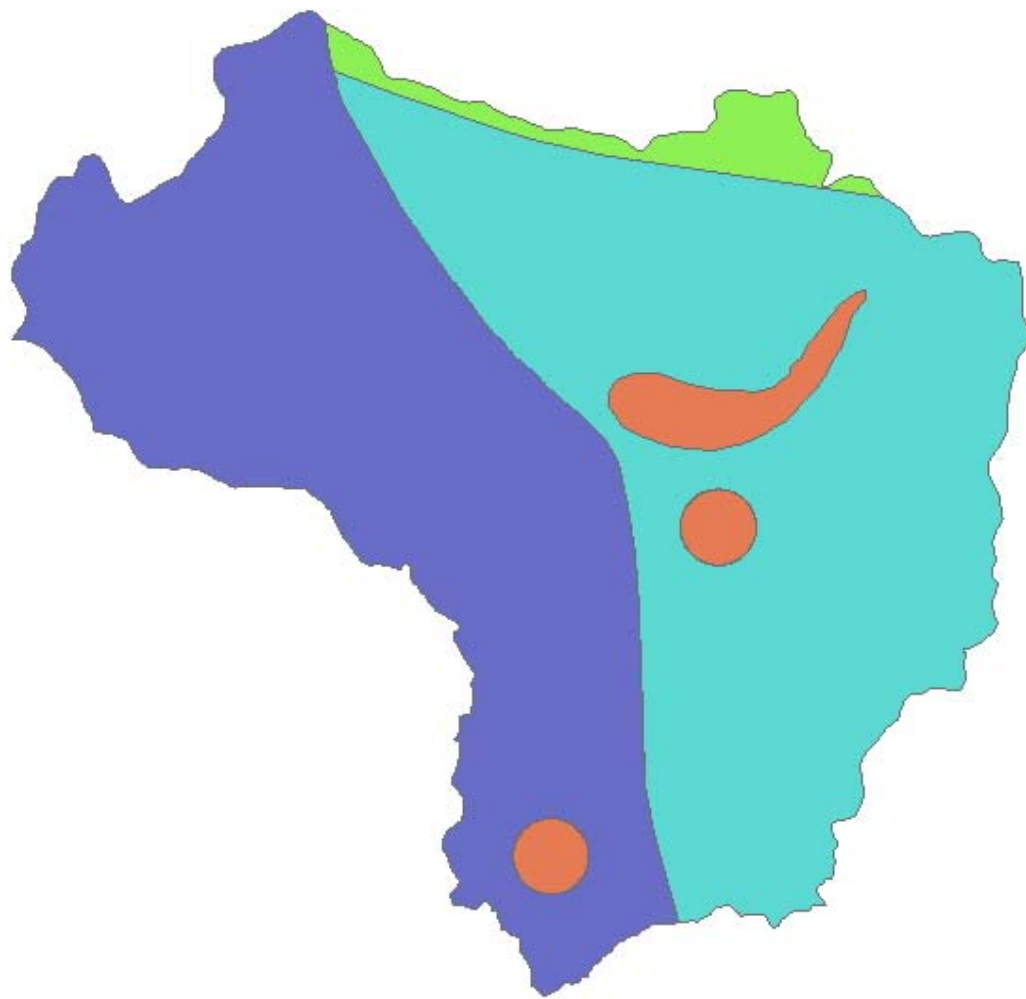
# Land Type Associations for HUCs 0315010401



**LTA**

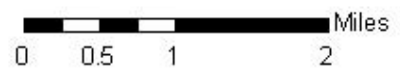
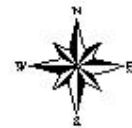
-  M221Dc037
-  M221Dc018
-  National Forest



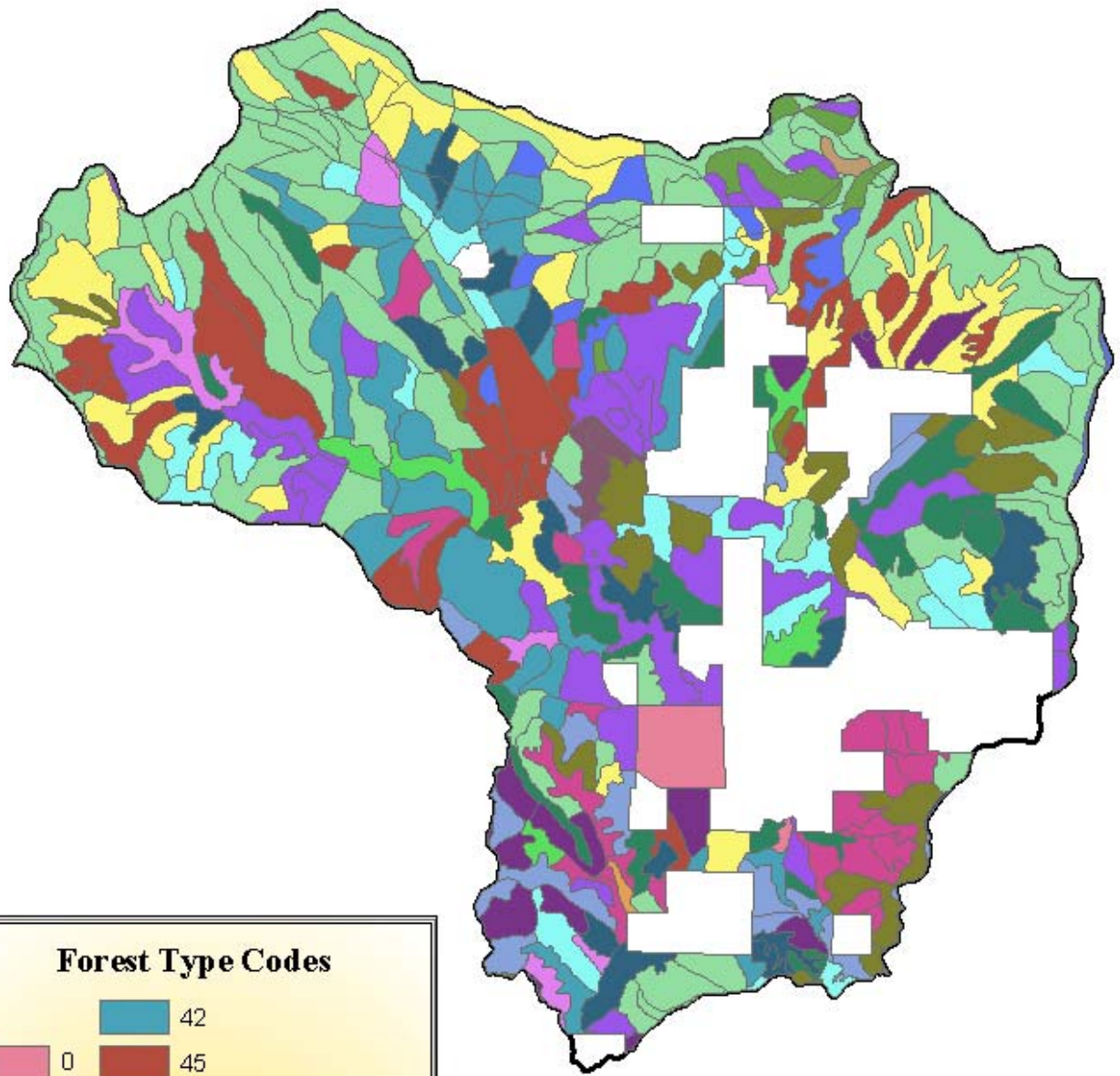


### Geologic Description


-  Biotite Gneiss
-  Metagraywacke/Mica Schist-Quartzite/Amphibolite
-  Mica Schist/Gneiss
-  Ultramafic Rocks Undifferentiated







**Forest Type Codes**

	42
0	45
3	46
9	47
10	48
12	50
16	52
31	53
32	54
33	56
41	59
 Watershed Boundary	

