



CHAPTER THREE

REGIONAL LAND USE AND GROWTH PATTERNS

presented to

MADISON COUNTY COMMISSION

by

**CHAMBER OF COMMERCE
OF HUNTSVILLE/MADISON COUNTY**

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TENNESSEE VALLEY REGIONAL GROWTH COORDINATION PLAN

DISCLAIMER

This study was prepared under contract with the Madison County Commission, Alabama, with financial support from the Office of Economic Adjustment, Department of Defense. The content does not necessarily reflect the views of the Office of Economic Adjustment.

This report is intended as an aid to planners, managers, elected officials, and other decision makers in the Tennessee Valley/Redstone Arsenal region. Our aim is not to dictate what should be done, but to assist in ongoing efforts to achieve goals and objectives identified and valued by the residents of the region. The recommendations presented in this report are suggestions for how the region could work towards those goals and objectives, based on best available information and current understandings.

The information, projections, and estimates in this report are based upon publicly available data and have been prepared using generally accepted methodologies and formulas. The projections and needs presented in this report are based upon best estimates using the available data. It is important to note that currently available information and understandings are incomplete and cannot account for the inevitable, but unpredictable, impacts of unexpected global, national, state, and/or local events. Actual results and needs may differ significantly from the projections of this report due to such unforeseen factors and conditions, as well as inaccuracy of available data, and/or factors and conditions not within the scope of this project. Persons using this information to make business and financial decisions are cautioned to examine the available data for themselves and not to rely solely on this report.

Neither the Madison County Commission, the Chamber of Commerce of Huntsville/Madison County, nor its subcontractors guarantee or warrant that the projections set forth in this report will, in fact, occur. The Madison County Commission, the Tennessee Valley Regional Growth Coordination Plan Advisory Committee and Task Forces, and the Chamber of Commerce of Huntsville/Madison County and its subcontractors disclaim any liability for any errors or inaccuracies in the information, projections, and needs analysis, regardless of how the data is used, or any decisions made or actions taken by any person in reliance upon any information and/or data furnished herein.

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EXECUTIVE SUMMARY

Even without the added employment and population caused by the addition of personnel, operations and activities at Redstone Arsenal, Limestone, Madison, and Morgan Counties (referred to herein as the Primary Study Area or PSA) have been experiencing significant growth and are expected to continue doing so. While the current economic slowdown is impacting all portions of the nation, this is expected to be a relatively short-term condition with highly desirable areas such as the greater Huntsville area (including all of the PSA) returning to more robust levels of growth.

This growth will be reflected in additional residential development, places of employment, and retail and service establishments to serve the growing population and business base. BRAC-related growth will add to the already significant level of population and housing growth that was occurring pre-BRAC. As is normal, population growth will in turn lead to demand for additional retail and service establishments and draw additional businesses who seek to support other companies in the area and take advantage of the growing workforce.

While the most noticeable growth trend in the PSA over the past several years has been in residential development, Madison County and the City of Huntsville are nationally known for their “industrial development” opportunities including sites for manufacturing, offices, research and development, and distribution uses. Limestone and Morgan Counties also have master-planned business park areas that may attract contractors supporting Redstone Arsenal who do not need immediate proximity. Some of the military contractors moving to the area to support increased operations at the Arsenal will locate in these business parks, resulting in increased usage of the region’s utility and transportation infrastructure.

The region has a fairly substantial inventory of built but unsold homes, developed but vacant lots (streets and utilities are available), and undeveloped vacant lots (streets and/or utilities are not available or not to the extent required for a building permit). This suggests that additional housing can be provided over an extended period to meet BRAC relocatee and support contractor needs in the single-family market; there are fewer opportunities for new units in the multi-family market.

The largest portion of direct BRAC-related growth is expected to occur in Madison County and its constituent communities. Future population and business growth in Huntsville, the City of Madison, and Madison County as a whole will continue to impact land-use patterns and transportation and utility infrastructure needs. Transportation needs in Madison County will be impacted by BRAC-related growth in surrounding counties, in particular, from Limestone and Morgan Counties, because workers and contractors must pass through Madison County to reach Redstone Arsenal. Limestone and Morgan Counties will experience lesser but still noticeable growth pressures from BRAC-related growth added to ongoing growth trends.

Zoning regulations and community comprehensive plans in the PSA’s constituent communities appear to be supportive of well-planned and managed growth. However, the lack of such regulations and plans in unincorporated areas makes management of future growth difficult.

The counties in the PSA should be planning for future growth management now rather than risking possible adverse effects from unmanaged growth in the future.

Protection of ground water quality is of particular concern. The counties in the PSA should become more proactive in managing development to assure that groundwater quality is not degraded and that the counties develop over time in accordance with a well thought-out plan, rather than in an unplanned, haphazard, and potentially undesirable manner. This is particularly necessary in the portion of Morgan County immediately south of Redstone Arsenal to preclude future conflicts between development in the county and operations at the Arsenal. County Comprehensive Development Plans are recommended. This may take changes in state statutes or authorization by the State Legislature to be allowed.

Neither Huntsville nor Madison County officials have expressed concern about potential incompatibilities with land uses at Redstone Arsenal. New development and activities within the Arsenal are consistent with past uses, which are familiar to residents of surrounding neighborhoods. Similarly, from Redstone Arsenal's perspective, no current or proposed surrounding land uses are incompatible with Arsenal operations. However, continuing care must be taken in the future to assure that off-post development does not create encroachment issues for Arsenal operations.

Recommendations include:

1. County Comprehensive Development Plans, including a detailed Natural Resource Inventory, should be prepared and implemented by Madison, Morgan, and Limestone Counties. This may take changes in state statutes or authorization by the State Legislature to be allowed. Preparation of such Comprehensive Development Plans typically cost in the \$125,000 - \$150,000 range.
2. A structured approach should be developed with quarterly meetings held between representatives of Redstone Arsenal, the City of Huntsville, and Madison and Morgan Counties to identify and resolve any potential encroachment or land-use issues that could have a negative impact on either the Arsenal or surrounding neighborhoods.

BACKGROUND

The **Madison County Commission (MCC)** issued a Request for Proposal (RFP) to develop the **Tennessee Valley Regional Growth Coordination Plan (TVRGCP)**. Funding for this study was provided by the **U.S. Department of Defense (DoD), Office of Economic Adjustment (OEA)** to prepare the Tennessee Valley for the impact of **Base Realignment and Closure (BRAC) 2005** at **Redstone Arsenal (Arsenal)**.

The **Chamber of Commerce of Huntsville/Madison County (Chamber)** submitted a proposal in response to MCC's nationwide search for a consultant as addressed in RFP P-2007-01. This proposal identified the Chamber as the lead consultant with Wadley-Donovan GrowthTech, LLC (WDG) serving as a subcontractor. After completing a competitive bid process, MCC awarded the contract to the Chamber with a Notice-to-Proceed date of October 29, 2007.

The Tennessee Valley **Study Area** for this project includes thirteen counties in northern Alabama and southern Tennessee within an eighty-mile-radius of the Arsenal. The **Primary Study Area (PSA)** includes the three Alabama counties of Limestone, Madison, and Morgan. The **Broader Impact Region (BIR)** includes the additional six counties in Alabama (Colbert, Cullman, Jackson, Lauderdale, Lawrence, and Marshall) and four counties in Tennessee (Franklin, Giles, Lawrence, and Lincoln). A map of the Study Area is shown in Figure 3-1.

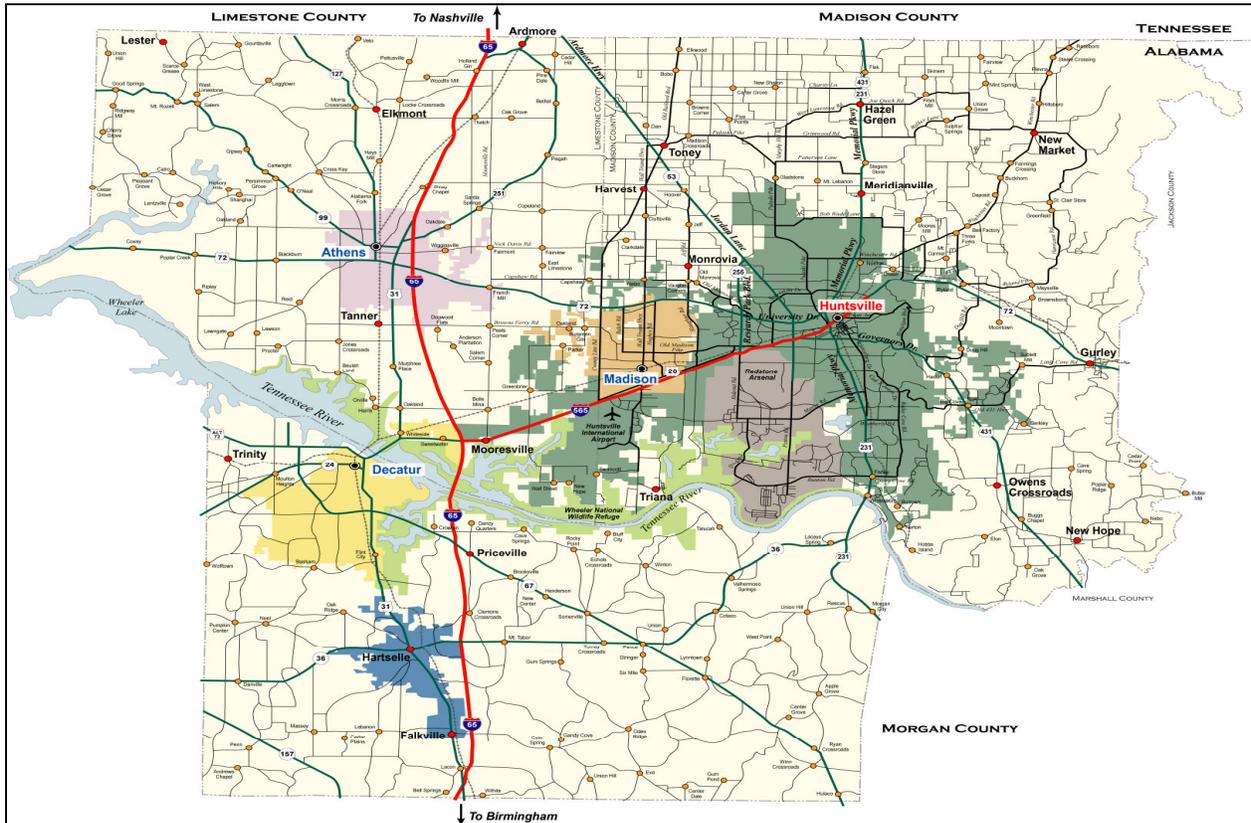
Figure 3-1
Tennessee Valley Regional Growth Coordination Plan Study Area



PRIMARY STUDY AREA

The Primary Study Area (PSA) is the three county area (Limestone, Madison and Morgan) surrounding Redstone Arsenal. Figure 3-2 shows the relationship of the Arsenal to the three counties.

Figure 3-2
Area Surrounding Redstone Arsenal



Source: City of Huntsville Planning Division and the North Central Alabama Regional Council of Governments

The PSA contains numerous incorporated areas, both large and small, as summarized below:

County	Large Municipalities	Small Municipalities
Madison	Huntsville, Madison	Gurley, New Hope, Owens Cross Roads, Triana
Limestone	Athens	Ardmore, Elkmont, Lester, Mooresville
Morgan	Decatur	Hartselle, Priceville, Trinity

The PSA includes a large amount of unincorporated area in all three of its counties. Alabama State Law allows the annexation of portions of a county by a municipality located in an adjacent county. Thus, the Cities of Huntsville, Madison, and Decatur have annexed portions of Limestone County; this is particularly the case along the I-565/Alabama Highway 20 corridor in the vicinity of I-65 (although this is not the only location).

PURPOSE

The purpose of this portion of the study is to identify growth management issues that will impact the region due to the influx of new jobs to Redstone Arsenal (Arsenal), coupled with contractors who will follow those jobs, construction jobs for new facilities at the Arsenal, and the “multiplier impacts” that are caused by direct activity. All this activity will take place within the context of the ongoing growth that has been occurring in the Study Area, and would have been expected, even if no new jobs or operations had been brought to the Arsenal as a result of the BRAC 2005 process. However, it is meaningless to evaluate BRAC-caused impacts without understanding the baseline of existing growth trends and land uses. This portion of the study provides a brief overview of those growth trends and the regional land-use patterns they cause.

METHODOLOGY

The analysis of land use and growth trends in the PSA provided in this section of the TVRGCP was developed from extensive research that included review of many relevant documents provided by the cities and counties in the PSA or obtained from other sources; interviews with planning officials from the cities and counties; interviews with representative developers and real estate brokers; interviews with representatives of Redstone Arsenal; review of information contained in numerous city, county, state, federal, Arsenal and other websites; and input from the TVRGCP Advisory Committee. Sources for the data cited below are provided in the text or with the accompanying tables.

GROWTH STATISTICS

Table 3-1 summarizes the primary growth statistics (population, housing units, housing vacancies, and population density) for the PSA and the State of Alabama. It shows the following:

- All three counties of the PSA have witnessed substantial growth since 1990, with a combined population growth of nearly 100,000.
- More than 65% of the population growth has been in Madison County. Although not shown in Table 3-1, the City of Madison accounted for nearly one-third of Madison County’s population increase, growing from 14,904 in 1990 to 36,277 in 2006.
- Between 1990 and 2000, all three counties exceeded the state’s growth rate. Over the 16-year period from 1990 to 2006, Madison and Limestone counties exceeded Alabama’s growth rate, while Morgan County’s growth slowed slightly between 2000 and 2006.
- This population growth has resulted in a substantial amount of housing development. From 1990 to 2006, there was an increase of 53,675 housing units in the PSA.

**Table 3-1
Primary Study Area Growth Statistics**

Category	County			Alabama
	Madison	Limestone	Morgan	
Population				
1990 Population	238,912	54,135	100,043	4,040,389
2000 Total Population	276,700	65,676	111,064	4,447,351
2006 Total Population	304,307	72,446	115,237	4,590,240
Population Growth 1990-2000	37,788	11,541	11,021	406,962
Annual % Population Growth 1990-2000	1.58%	2.13%	1.11%	1.01%
Population Growth 1990-2006	65,395	18,311	15,194	549,851
Annual % Population Growth 1990-2006	1.71%	2.11%	0.94%	1.36%
Housing Units				
1990 Total Housing Units	97,855	21,455	40,419	1,506,790
2000 Total Housing Units	120,228	26,897	47,388	1,963,711
2006 Total Housing Units	134,731	28,837	49,836	2,110,139
Housing Unit Increase 1990-2000	22,373	5,442	6,969	456,921
Annual % Housing Unit Growth 1990-2000	2.29%	2.54%	1.72%	3.03%
Housing Unit Increase 1990-2006	36,876	7,382	9,417	603,349
Annual % Housing Unit Growth 1990-2006	2.36%	2.15%	1.46%	2.50%
Housing Vacancy				
1990 Vacant Housing Units	6,647	1,770	2,620	163,589
2000 Vacant Housing Units	10,333	2,209	3,786	226,631
2006 Vacant Housing Units	12,776	2,566	3,848	314,081
Vacancy Rate 1990	6.8%	8.2%	6.5%	10.9%
Vacancy Rate 2000	8.6%	8.2%	8.0%	11.5%
Vacancy Rate 2006	9.5%	8.9%	7.7%	14.9%
Population Density				
Square Miles	813	568	599	52,423
1990 Population per Square Mile	293.9	95.3	167.0	77.1
2000 Population per Square Mile	340.3	115.6	185.4	84.8
2006 Population per Square Mile	374.3	127.5	192.4	87.6

Source: US Census Bureau, American Fact Finder; Wikipedia

- As with population growth, Madison County accounted for the majority (69%) of the total increase in housing stock.
- Despite this significant growth rate in housing stock, the actual rate of housing stock growth in all three PSA counties was less than that of the state during both the 1990-2000 and 1990-2006 periods.
- Both the number of vacant housing units and vacancy rate increased in all three PSA counties between 1990 and 2000. The trend continued to 2006, except for Morgan County, whose vacancy rate declined slightly between 2000 and 2006. [It should be noted that a vacant unit is not necessarily one that is on the market for sale or lease; the vacancy rate also includes second homes that were not occupied as of the date the housing count and categorization was made.]
- The vacancy rate in all three PSA counties was significantly less than Alabama's statewide vacancy rate in 1990, 2000, and 2006.

- There is a vast difference in population density among the three PSA counties. In 1990, Madison County's population density was 76% greater than Morgan County's, which in turn was 75% greater than Limestone County's. By 2006, Madison County's population density had increased to 95% more than Morgan County, which was 51% greater than Limestone County.
- All three PSA counties have a substantially higher population density than Alabama as a whole.

Even without the added employment and population caused by the addition of personnel, operations and activities at the Arsenal, the PSA has been experiencing significant growth and is expected to continue doing so. This growth will be reflected in additional residential development, places of employment, and retail and service establishments to serve the growing population and business base. BRAC-related growth will add to an already significant level of population and housing growth. As is normal, population growth will in turn lead to demand for additional retail and service establishments and draw additional businesses that seek to support other companies in the area and take advantage of a growing workforce.

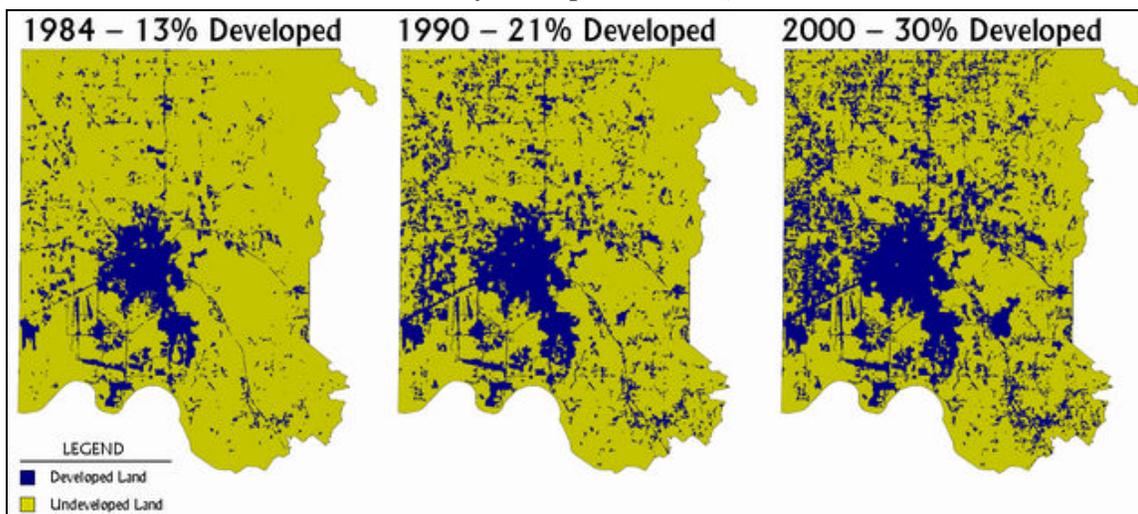
GROWTH TRENDS AND LAND USES WITHIN THE PSA

A. Madison County

Within the PSA, Madison County is the largest and most rapidly growing county (in terms of the actual number of new residents and housing stock).

Figure 3-3 graphically displays the portions of Madison County that can be identified as developed using satellite imagery. Figure 3-3 shows that the developed portion of Madison County more than doubled between 1984 and 2000, resulting in an increase in developed land area of more than 1% per year.

Figure 3-3
Madison County Development Trends; 1984-2000

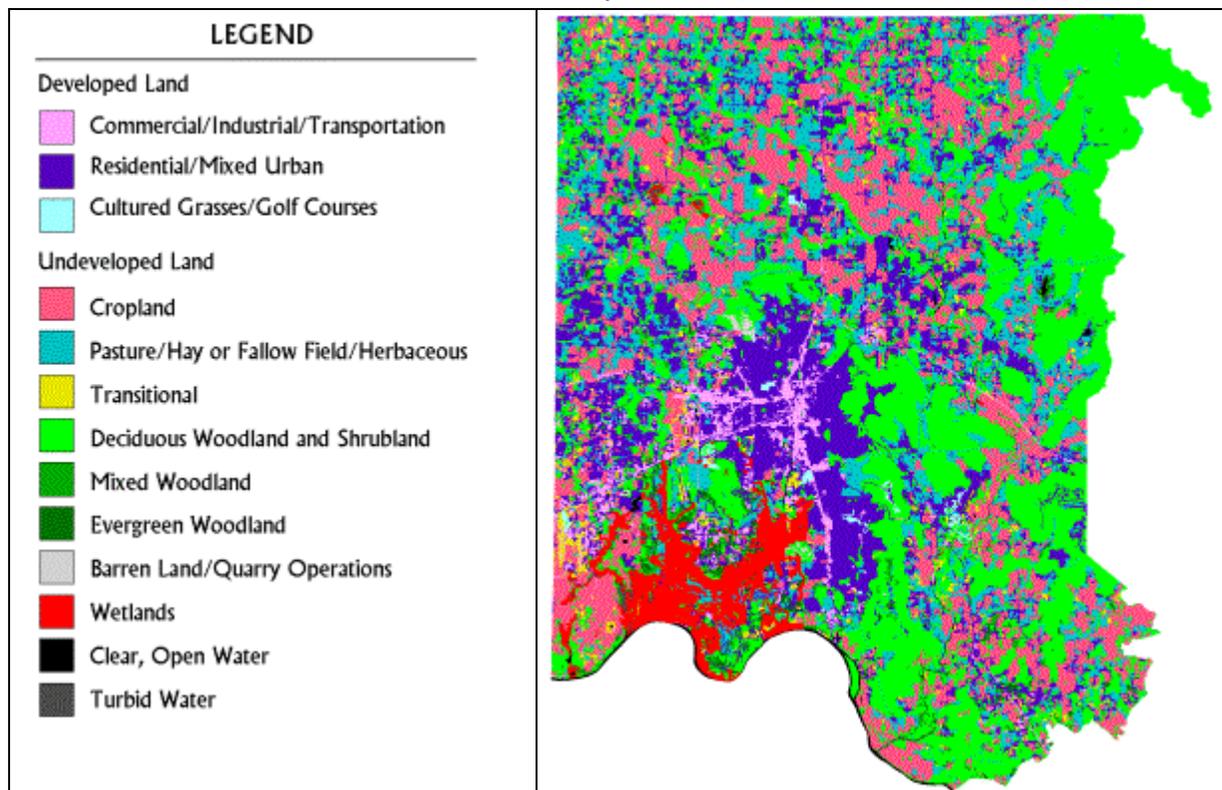


Source: National Consortium on Remote Sensing in Transportation-Environmental Assessment

While the growth is impacting almost every portion of the county, it is particularly noticeable in or around: the City of Madison; the New Hope/Owens Cross Roads area; the area east of Highway 431 and north of Old Highway 431; the Three Forks/Moores Mill/Mount Carmel area east of downtown Huntsville on both sides of Winchester Road; the Hazel Green area along the US 231/431 corridor and West Limestone/Joe Quick Road; and the area west of Ardmore Highway (Highway 53) and north of US 72.

Figure 3-4 shows the various land uses in Madison County as mapped in 2000 by satellite imagery. Both residential (shown as dark blue) and commercial/industrial/transportation (shown as pink) uses are noticeable.

Figure 3-4
Madison County Land Uses; 2000



Source: National Consortium on Remote Sensing in Transportation-Environmental Assessment

Madison County and the City of Huntsville are nationally known for their “industrial development” opportunities including sites for manufacturing, offices, research and development and distribution uses. This includes the world-renowned Cummings Research Park, where 500± acres remain for development, Jetplex Industrial Park (1,400 acres of which a substantial portion is in Limestone County but is adjacent to the City of Huntsville); Jetplex Industrial Park South (1,400 acres); and several smaller business or industrial parks with a combined nearly 200 acres available. The county is well positioned to accommodate future contractor growth that results from BRAC 2005.

The densest development in Madison County shown in Figure 3-4 is associated with the City of Huntsville. In 2004, the City’s Planning Division prepared a Land-Use Study which identified major land uses as of that year and compared them with a similar analysis prepared in 1988. The 2004 study found the following changes in the city’s land uses (see Table 3-2).

Table 3-2
City of Huntsville Land Use Comparisons; 1998 vs. 2004

Land-Use Classification	1988	2004	Change	% Change
Low Density Residential	14.18%	21.76%	+ 7.58%	53.5%
Transportation	1.89%	4.83%	+ 2.94%	155.6%
Cropland	18.79%	21.14%	+ 2.35%	13.5%
Forest	25.10%	27.22%	+ 2.12%	8.4%
Industrial	0.85%	2.43%	+ 1.58%	185.9%
Recreation		0.79%	+ 0.79%	NA
Waste Disposal/Quarry		0.76%	+ 0.76%	NA
Water	1.69%	1.48%	- 0.21%	-12.4%
Campus/Institutional	2.82%	2.52%	- 0.30%	-10.6%
General Commercial	5.78%	4.95%	- 0.83%	-14.4%
High Density Residential	7.18%	2.10%	- 5.08%	-70.8%
Urban Open	21.73%	10.04%	- 11.69%	-53.8%

Source: City of Huntsville Land Use Study 2004

The most noticeable City of Huntsville land-use trends shown in Table 3-2 are:

- the major increase in land area devoted to Low Density Residential use (up 53.5%), which reflects the addition of 7,524 single family subdivision lots between 1989 and 2003;
- the increase in area devoted to Transportation (up 155.6%) - this category includes roadways, airports, railroads and major parking areas;
- the increase in area devoted to Industrial use (up 185.9%) - this category includes the Jetplex Industrial Park at Huntsville International Airport, but does not include Cummings Research Park, which is classified as Campus/Institutional;
- the major decrease in Urban Open land use (down 53.8%) - this decline reflects the addition of a Recreation category in 2004 that shifted some park lands from the Urban Open category; the shifting of the Huntsville International Airport from Urban Open to Transportation; and the build out of the Hampton Cove area, now classified as Low Density Residential; and
- the decline in High Density Residential land use (down 70.8%) largely attributable to a change in classification method between 1988 and 2004.

The single most noticeable trend in the analysis above for the City of Huntsville is the continued development of low-density residential housing. This trend has continued through 2007. An analysis of a map entitled “Huntsville Development 2004 to Present (11/07)” shows that during that period there was the following residential activity:

Table 3-3
City of Huntsville Residential Lot/Unit Activity
2004 through November 2007

Type of Project	# of Projects	Final Approval	Preliminary Approval	Layout
Single Family (lots)	115	6,384	5,243	5,540
Apartments (units)	11	1,821	240	
Condominiums (units)	1		90	
Totals	127	8,205	5,393	5,540

Source: City of Huntsville data analyzed by Garnet Consulting Services, Inc.

Table 3-3 clearly demonstrates substantial residential development activity in the City of Huntsville with 127 projects in various stages totaling 6,384 single-family lots that received final approval, 5,243 lots that received preliminary approval, and 5,540 lots that were in the layout stage. While multi-family development was not as robust, there were still 11 apartment projects with 1,821 units that had received final approval and 240 units that had received preliminary approval. There was only one condominium project during the period covered, with 90 units that had received preliminary approval. If all these projects are built out as currently planned, they will result in more than 19,000 new dwelling units in the City of Huntsville.

Newly created areas for commercial and industrial development were not nearly as significant. There were only 9 such projects during the period, resulting in 37 lots with final approval, 18 lots with preliminary approval, and 59 lots in the layout stage. No information is available from the city's map showing the total acreage involved, but historically, lots intended for business development are larger than lots intended for residential development. As a point of reference, if these lots averaged 5 acres each, they would total 570 acres. It should be noted that the need for additional locations for commercial development, in particular for activities that would locate in a business or industrial park, was not high given the inventory of available property in locations such as Cummings Research Park, Jetplex Industrial Park, and similar locations already existing in Huntsville or Madison County.

Madison County is also the location of the smaller but rapidly growing City of Madison. Although incorporated in the 1860s, Madison remained small until the mid-1980s when it began a period of growth that has brought its population to more than 40,000. At its current land area, the estimated maximum population is approximately 75,000. Madison's Future Land Use Map is not suitable for inclusion here because of its size and complexity. It shows the City continuing to develop with a mix of high, medium, low-density and cluster residential; neighborhood, central business district, and general commercial areas; industrial districts, institutional uses and open space.

While much of Madison's early population influx settled in apartments, they subsequently upgraded to single-family homes. Today Madison considers itself to be an affluent suburb of Huntsville, as demonstrated by a somewhat higher median family income (\$63,695 vs. \$59,663); a higher median household income (\$51,359 vs. \$46,193); and a lower percentage of individuals below the poverty level (11.3% vs. 13.8%). However, Madison lags Huntsville slightly in per capita income (\$27,065 vs. \$27,449). Most tellingly, the median value of owner-

occupied homes in Madison in 2000 (2006 data is not available) was \$141,300 compared to \$97,300 in Huntsville. [All data is from the U.S. Census Bureau's American Fact Finder website for the year 2006 unless otherwise indicated. All income statistics are in 2006 inflation adjusted dollars.]

Madison is heavily dependent on sales taxes, which account for approximately 50% of its tax revenue. Therefore, the city has been aggressive in annexing additional areas that are commercially developed or have the potential to be. Recent annexations, however, have focused more on areas for residential development than commercial. Madison's recent annexation of approximately 3 square miles in Limestone County includes commercial strips associated with Highway 72, Huntsville-Browns Ferry Road, Powell Road, and Segers Road, but the predominant land use planned is either pure residential or mixed residential and commercial.

Madison estimates that approximately one-third of the workers who relocated to the Arsenal as a result of the 1995 BRAC chose to locate in Madison because of its available housing stock for middle-income jobs in close proximity to the Arsenal. The City expects to capture as much as 25-33% of the relocatees from the current BRAC because of the appeal of its housing stock for the higher wage jobs coming to the Arsenal or in support of it, and is planning for this level of growth. As both Huntsville and Madison continue to look for areas to expand their tax bases, there will continue to be an "annexation competition" between the two.

Future population and business growth in Huntsville, Madison, and Madison County as a whole will continue to impact land-use patterns and transportation and utility infrastructure needs. The largest portion of direct BRAC-related growth is expected to occur in Madison County and its constituent communities. Transportation needs in Madison County will be impacted by BRAC-related growth in surrounding counties, in particular, from Limestone and Morgan Counties, because workers and contractors must pass through Madison County to reach the Arsenal.

B. Limestone County

Limestone County is the most rural of the three counties comprising the PSA, with the lowest population and population density. It does not have a County Planning Department and has not been the subject of the types of analysis that have focused on Madison County. Therefore, information about land use and growth trends must rely more on anecdotal information.

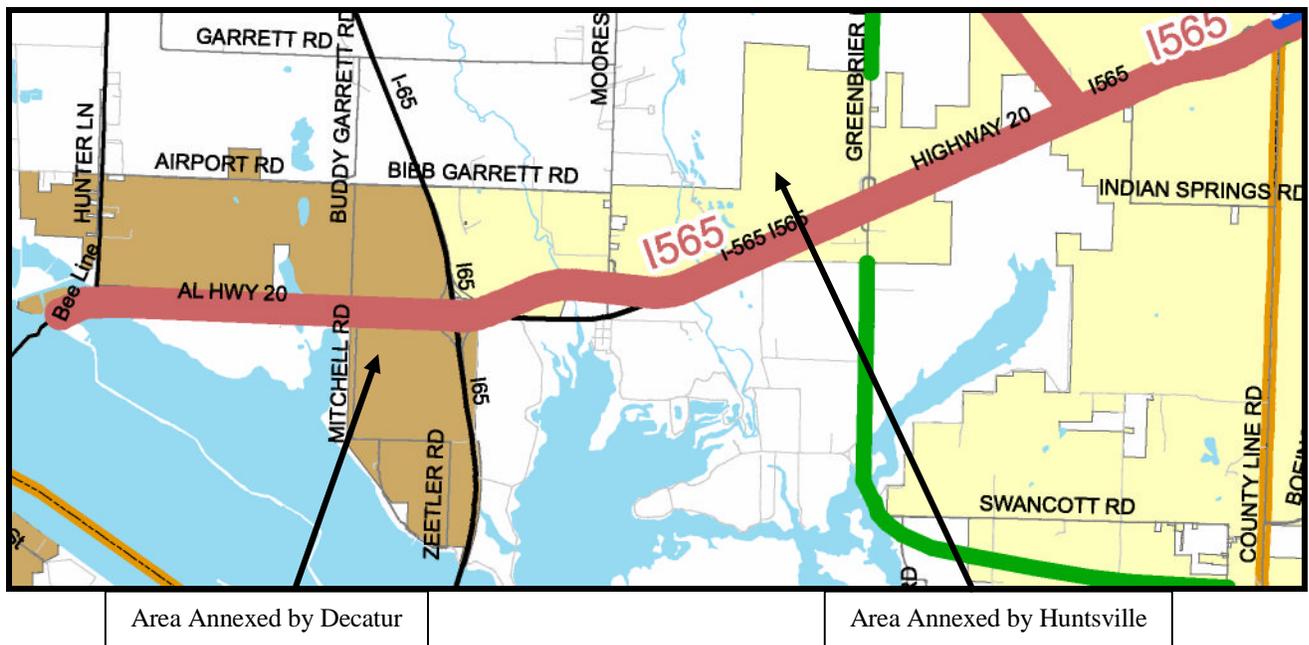
As was demonstrated in Table 3-1, Limestone County has had the fastest population growth rate of the three PSA counties, although in part this is a function of the small population base it has had historically. Nonetheless, this growth has resulted in the addition of a significant number of new housing units – nearly 7,400 between 1990 and 2006, a trend that is expected to continue.

Because the southern portion of Limestone County sits astride the I-565/Highway 20 corridor, which intersects with I-65 running north to Nashville and south to Birmingham, Montgomery

and Mobile, unincorporated portions of Limestone County have been a popular target for annexation by the City of Athens, the Cities of Huntsville and Madison in Madison County, and the City of Decatur in Morgan County. Huntsville has annexed approximately 22 square miles of Limestone County while Madison and Decatur have each annexed 5± square miles.

As previously noted, the area most recently annexed by the City of Madison is intended primarily for residential development with smaller areas of commercial use. Areas along the I-565/ Highway 20 corridor are primarily business in nature; much of this has been annexed by the City of Huntsville (east of I-65) or the City of Decatur (west of I-65). This area is shown in Figure 3-5.

Figure 3-5
Portion of Limestone County Annexed by Huntsville and Decatur



Source: City of Huntsville Geographic Information Systems Map edited by Garnet Consulting Services, Inc.

This area contains some of Limestone County’s primary business park areas including the 237-acre Southpoint Industrial Park in the northeast quadrant of the I-65/I565 interchange, and the 26 remaining acres of the 32-acre I-565 Business Park at the Greenbrier Road interchange of I-565. These and other business parks and sites in Limestone County are considered by Limestone County officials to provide an adequate inventory for the next 5 to 7 years.

A recently announced project in the portion of Limestone County annexed by the City of Decatur is called Sweetwater, described as “...a major tourist and shopping destination planned as a mixed-use retail, entertainment, office and residential community, to be located on 540 acres in Decatur, on the south side of Highway 20 at Interstate 65/565.” The first phase will include 125 acres anchored by Bass Pro Shops and a major hotel and convention center. Phase I will include up to 300,000 square feet of additional retail space with construction estimated to begin in 2009 or 2010. Bass Pro Shops typically draw customers from a 100-mile radius. When fully developed, Sweetwater will have a total of

approximately 1 million square feet or more of retail space, 825,000 square feet of office and medical space, an amphitheater and 2,675± residential dwelling units (home to 6-8,000 people). A large “mega-church” is also reported to be planned to the west of the Sweetwater development on Highway 20. BRAC-related traffic passing through this corridor will exacerbate congestion

Future growth areas in Limestone County include a new I-65 interchange at Tanner Road, which is expected to stimulate development both within and outside the Athens City limits; Browns Ferry Road; and Highway 53 between Ardmore and Huntsville.

The primary community in Limestone County is the City of Athens, which accounted for more than 31% of the county’s 1990 population and nearly 29% of the county’s 2000 population. [Data on Athens is not available for 2006.] Athens is both the population and retail/services hub of Limestone County. Residential development in or around Athens has included single and multi-family areas of many types and price ranges, including the Canebroke golf course community, many seasonal dwellings along the Tennessee River, and The Point, an upscale, high-rise condominium project.

Athens has developed with a mix of land uses, a trend that is expected to continue. Table 3-4 shows the distribution of land uses in Athens in 2003. As can be seen, the city has substantial undeveloped area, much of which is suitable for future growth, and some of which has already been planned for new residential subdivisions.

Table 3-4
City of Athens Land Uses – 2003

LAND-USE INVENTORY			
Land-Use Type	Acreage	% of Developed Area	% of Total
Undeveloped	17,078	N/A	70.19%
Residential-Low	5,060	69.75%	20.80%
Residential-Med	80	1.10%	0.33%
Residential-High	136	1.87%	0.56%
Commercial	931	12.83%	3.83%
Industrial	435	6.00%	1.79%
Public Facilities	355	4.89%	1.46%
Institutional	123	1.70%	0.51%
Recreational	134	1.85%	0.55%
Total Study Area	24,332	N/A	100%

Source: City of Athens Comprehensive Plan

Because of the multiple convenient transportation routes, Limestone County is a major source of workers for Madison County businesses, with nearly 9,000 workers commuting to work in Madison County. This ease of transportation and available housing opportunities are expected to cause some of those moving to the area for new jobs at the Arsenal, or support contractors, to reside in Limestone County. This population and business growth is expected to fuel demand for additional retail and service growth. In turn, this will create a need for additional or improved transportation and utility infrastructure, some but not all of which will be directly attributable to BRAC.

C. Morgan County

Morgan County is a hybrid area, combining some of the urbanization of Madison County with some of the rural character of Limestone County. Like Limestone County, the lack of a county planning agency and detailed land-use studies such as those available for Madison County (see Figures 3.3 and 3.4) and Huntsville necessitate a discussion of land uses and growth trends based on interviews.

Nearly 50% of the county's population lives in the City of Decatur, which has expanded in land area through annexations in both Morgan and Limestone Counties. Continued expansion will be dependent in part on the ability or willingness of Decatur Utilities to service the area. While city officials report seeing "spurts of growth", they also note that growth in general slowed after 9-11. The city is working on an updated Comprehensive Master Plan (the 2020 Plan) to guide future growth; the existing 2010 plan was prepared in 1999.

Decatur has a broad mix of a variety of housing types and values; the median value of single-family homes in Decatur in the 2000 Census was \$89,000, 2% less than in Athens, 8% less than in Huntsville, and 37% less than in Madison. City officials estimate that the city is adding about 200 new housing units a year, with lot creation and building permits occurring at the same rate, although a significant inventory of vacant lots was also reported. One change in residential land use noted was the development of larger homes on smaller lots. Most new growth is occurring in the southwest portion of the community.

Decatur also has a broad mix of industrial uses, particularly clustered along the bank of the Tennessee River and along Highway 20 towards Lawrence County to the west. In addition, as the County Seat and major population center, Decatur has the largest cluster of personal and business services and retail establishments in the county. The city has a comprehensive redevelopment plan for its downtown and riverfront area.

Decatur hopes to attract about 10% of the households who relocate to the area to fill the new jobs at the Arsenal. This is consistent with experience from the 1995 BRAC.

A secondary population center in Morgan County is the City of Hartselle, which grew from 10,795 to 12,019 between the 1990 and 2000 Censuses, a growth rate of more than 11%. Hartselle is largely a bedroom community with a few businesses and a small industrial park. The entire eastern portion of Morgan County is an unincorporated area that lacks public utilities. The northern portion of this area lies immediately south of the Arsenal. Little significant development is expected in this area in the immediate future unless the City of Huntsville annexes it and extends water and sewer services. This has been explored in the past, but has not occurred.

Morgan County is aggressive in its business recruitment and expansion activities. There are more than 200 industries of a variety of types, 6 of which employ 500 or more. Utilities are available in key areas to support growth. There are three existing business park areas with substantial available acreage (Mallard Fox Creek Industrial Park – 400± available acres; Hartselle Industrial Park – 26 acres; State Docks Road – 56 acres). A major new business park

is being planned on both sides of I-65 south of Decatur and Hartselle. The first phase will include 150± acres of what is a total 1,800-acre area. The Morgan County Economic Development Association is also exploring additional riverfront development and has identified 3 potential sites.

Approximately 8,000 Morgan County residents commute to jobs in Madison County daily. A large number of these use Alabama Highway 20 to cross the Tennessee River and pick up I-565 to Huntsville. Because of the anticipated business growth along this stretch of road (see the area shown in Figure 3-5), some of which is part of Decatur although located in Limestone County, this is an area of significant concern about the adequacy of roadways.

Population growth in Morgan County caused by BRAC relocatees and related business growth from companies seeking to serve new commands and operations at the Arsenal or related contractors, will impact many aspects of Morgan County's future planning, infrastructure and service needs.

RESIDENTIAL DEVELOPMENT TRENDS

Housing is a topic of concern for the PSA from two perspectives.

- First, can the area provide enough housing to accommodate the households that will move to the area to fill the jobs being relocated to the Arsenal or by contractors who will support activities at the Arsenal?
- Second, will the anticipation of this BRAC-related need for housing fuel speculative development that will flood the market with a glut of unneeded units?

While housing is the subject of a separate report that is part of this project, it is also addressed briefly here because of its direct relationship to land use and growth trends.

Table 3-4 provides some relevant information from just the City of Huntsville. Because much of the region's housing development occurs in unincorporated portions of the three PSA counties, comparable information is not available about activity in those counties. However, MarketGraphics of North Alabama (MarketGraphics Research Group) publishes a "North Alabama Housing and Subdivision Analysis" three times a year, with the report dated February 2008 used in this analysis. Information from that report pertinent to residential development trends in the three PSA counties includes the following:

- From 2001 through 2007, Madison County averaged more than 63.1% of the nine-county North Alabama region's residential building permits. Limestone County averaged 12.6% and Morgan County averaged 9.8% of the region's residential building permits. The three PSA counties averaged 85.5% of the entire region's residential building permits over a 7-year period. This confirms that these counties, particularly

Madison County, are the most likely locations where households brought to the region because of the BRAC relocations will settle.

- In the four county region including the three PSA counties plus Marshall County, there has consistently been a small amount of speculative over-building of single-family housing (not rentals) since March 2003. This means there is some available housing to meet BRAC relocatee needs.
- There is a fairly substantial inventory of built but unsold homes, developed but vacant lots (streets and utilities are available) and undeveloped vacant lots (streets and/or utilities are not available or not to the extent required for a building permit). This suggests that additional housing can be provided over an extended period to meet BRAC relocatee and support contractor needs in the single-family market.
- The forecast demand for lots over the next 12 months is 6,340 compared with an inventory of 14,316 lots. Limestone County has the greatest surplus supply, which cuts across all price ranges. This suggests that BRAC relocatees may find some bargains in Limestone County due to competition, but also suggests that the county may need an adjustment in land-use trends.
- Madison County has the largest supply of undeveloped lots, totaling 11,183 of the PSA's 14,679, indicating that additional housing development can be expected in Madison County over time as BRAC-related or other market demands arise.
- Despite an inventory of built but unsold homes, there are still specific unmet needs when price range and geographic area are combined. This is particularly true for lower cost homes.
- The total forecast demand for needed new homes and lots in the five year 2008-2013 period is 26,820 in Madison County, 5,721 in Limestone County and 3,293 in Morgan County. If this level of residential development is realized, it will continue to be the predominant land use and growth trend in the region.

This research document contains extensive additional information that will be assessed in more detail in the Regional Housing Assessment section of the TVRGCP. However, the brief summary above is intended to demonstrate that residential development has been and will continue to be the most noticeable growth trend and land use in the PSA for the foreseeable future. It also suggests that the existing or anticipated inventory of lots and housing starts should mean those moving to the area as a result of BRAC 2005 will not have a major problem finding housing for sale.

DEVELOPMENT AND WATER RESOURCES

Because much of the unincorporated portions of the PSA are not served with public water and sewer, there is justifiable concern about the possibility of negative impacts on future water availability and quality from extensive development that is dependent on wells and on-site septic systems.

Mapping and other documentation available from the websites of the Alabama Department of Environmental Management (ADEM) and the Geological Survey of Alabama shows that the majority of the PSA is in the Highland Rim Ground Water Province, with a small portion along the southern edge of the PSA in the Cumberland Plateau Ground Water Province. The Highland Rim Ground Water Province is described as having unevenly distributed groundwater, with caves and sinkholes common; generally hard water with objectionable amounts of iron, carbon dioxide, or hydrogen sulfide in some areas; and perhaps most importantly, with contamination of groundwater a serious concern. (See ADEM's publication *Water Down Under*). This same report states that ground water in the Cumberland Plateau Ground Water Province is sufficient for smaller users but cannot sustain the needs of a major user.

Potential ground water contamination in the future can come from a variety of sources such as improperly functioning septic systems; agricultural runoff from fertilizers, pesticides, or similar chemicals or fecal matter from animals; spills or leakage from industrial operations, gasoline station storage tanks or home heating oil tanks; salt used on roads; or other natural or human-induced sources. The impact on ground water resources from continued larger-scale residential development in the counties of the PSA must be a concern due to the lack of regulations controlling such development.

The counties in the PSA should become more proactive in managing development to assure that groundwater quality is not degraded. This may take changes in state statutes to be allowed.

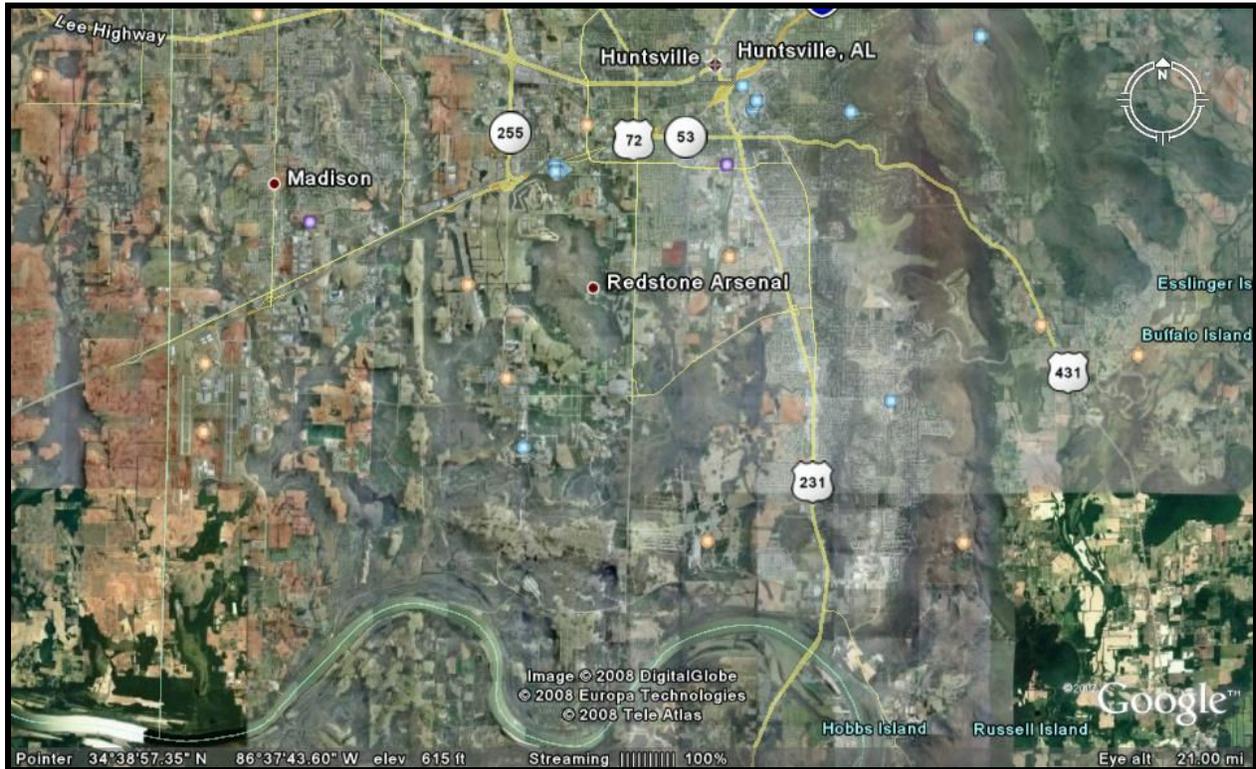
THE REDSTONE ARSENAL AREA

The focal point of the Study Area is Redstone Arsenal, a 38,000± acre area located in Madison County and adjacent to the City of Huntsville on most of three sides (north, east, and west). Figure 3-6 shows the Arsenal and the area immediately around it.

The Arsenal is a major employment center, hosting approximately 30,000 workers in nearly 1,800 buildings totaling 11.7 million square feet of space, with a substantial amount of new construction planned. In addition to the employee traffic, there is also substantial contractor traffic by representatives of off-post businesses visiting Army, NASA and other operations located on the Arsenal grounds such as NASA's Marshall Space Flight Center and the Defense Intelligence Agency's Missile & Space Intelligence Center. Because of its Commissary, Post Exchange and other facilities, a large number of retirees visit the Arsenal daily. Currently there are nearly 79,000 retirees and 118,000+ retiree family members drawn from an 80-mile-radius

who use these facilities. The current estimate of daily “through-the-gate” traffic is 48,400 vehicles. While Gate 9 from I-565 is the primary access point, traffic to the Arsenal uses multiple gates.

Figure 3-6
Redstone Arsenal Area



The four areas adjacent to the sides of the Arsenal can be described as follows:

- **North Side:** Immediately north of the Arsenal is I-565, an east-west, auxiliary interstate spur connecting to I-65 in Limestone County (west of Madison County and the Arsenal), that passes the Arsenal and continues to the east, part way through the City of Huntsville, where it joins with US 72. The area north of I-565 in the vicinity of the Arsenal is primarily a business area, dominated by Cummings Research Park and the smaller Thornton Research Park. A major lifestyle center (Bridge Street Town Centre) has recently been developed just north of the Arsenal at the intersection of Highway 255 (the primary link from I-565 to Cummings Research Park) and Old Madison Pike. There is a small residential neighborhood located north of I-565 and east of Highway 255. Major new development in this area is not anticipated, although there are infill opportunities.
- **East Side:** The major commercial/retail artery US 231 runs north-south through this area; however, this is a relatively narrow commercial strip. The predominant land use east of the Arsenal is residential. There are some smaller undeveloped wetlands and/or flood prone areas east of the Arsenal as well.

- **South Side:** The southern boundary of the Arsenal is the Tennessee River. South of the River is a sparsely developed portion of Morgan County, most of which is open fields or woodlands. Those areas that do have development are generally small scale residential in nature. Some developers have considered projects in the area, particularly in proximity to US 231, but the lack of utilities discourages such development. City of Huntsville utilities are the closest, but the cost of bringing these across the river is reported to be prohibitive at this time, which discourages annexation by Huntsville. The southwest portion of the Arsenal is either part of or adjacent to the Wheeler National Wildlife Refuge.
- **West Side:** Zierdt Road establishes much of the western edge of the Arsenal and runs south from I-565 (but currently has no access to it) to the small Town of Triana. While until relatively recently the area to the west of Zierdt Road was a largely undeveloped area, there are now multiple residential developments (with some small, supporting “neighborhood commercial” areas) west of the Arsenal. Further to the west is the Huntsville International Airport with a major industrial area east, south and west of the airside complex. There is a portion of the Wheeler National Wildlife Refuge adjacent to the southwest corner of and extending east into the Arsenal.

POTENTIAL LAND USE AND RELATED CONFLICTS

A primary concern of the study of which this report is a part, is to assure the land uses within the Arsenal and surrounding it are compatible. This concern pertains to both the adjacent neighborhoods and host communities – in particular the City of Huntsville and Madison County, which are the Arsenal’s largest and closest neighbors.

Neither Huntsville nor Madison County officials have expressed concern about potential incompatibilities. New development and activities within the Arsenal are consistent with past uses, which are familiar to residents of surrounding neighborhoods. In particular, the Enhanced Use Lease area to be developed in the northern portion of the Arsenal is a business park within the Arsenal that is a logical extension of the Cummings and Thornton Research Parks to the north.

The portion of the Arsenal which had the greatest likelihood for conflict in the past was along the northwestern edge, in close proximity to Zierdt Road. The fence line in this area is marked with signs warning of noise from explosions. These operations occurred in the area before the new housing development occurred along Zierdt Road, but have since been moved to other portions of the Arsenal, in particular, the southern end, which is used as the Arsenal’s demolition area. If substantial new development occurs in Morgan County immediately south of the Arsenal, there may be concern about noise and vibration from explosions, but the likelihood of large-scale development in this area is currently small due to the lack of public utilities.

Located in the northwest corner of the Arsenal is the Redstone Airstrip. Flight operations have caused what Arsenal representatives report as a low level of complaint in the past by neighbors about noise. The relocation to the Arsenal of the Aviation Technical Support Center from Fort

Rucker will result in additional helicopters using the Airstrip. Arsenal representatives report a noise study conducted as part of the overall Environmental Assessment early in the BRAC process concluded there would be no significant noise impacts due to relocating units. It should be noted that noise generation from within the Arsenal comes from multiple sources such as NASA operations associated with the Marshall Space Flight Center as well as from Department of Defense (DoD) operations.

There have been instances of environmental contamination related to past Arsenal operations. Trichloroethylene (TCE) was once made and/or used in Test Area 10 of the Arsenal off Redstone Road. The TCE leached into the groundwater with a plume extending to the east under the English Village residential area. While there is some homeowner concern, because the plume is 50 to 80 feet below the surface and the entire area is served by public water, the impact of the contamination is reported by Arsenal officials to be low.

Another portion of the Arsenal with high concentrations of TCE is in the southern end that contains both a demolition area and firing ranges used by the Federal Bureau of Investigation (FBI) and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). The contaminated areas are reported to have been contained, with remediation underway. No increase in activity is expected in this area. From the Arsenal's perspective, no current or proposed surrounding land uses are incompatible with Arsenal operations.

CONCLUSIONS

This document provides information on land uses and growth patterns in the three-county (Limestone, Madison, and Morgan) Primary Study Area (PSA) which is the focus of the Tennessee Valley Regional Growth Coordination Plan (TVRGCP). It looks at the interrelationship between projected activity at Redstone Arsenal (Arsenal) and the communities and counties in the PSA. While the intent is on gaining an understanding of the impacts of BRAC-related growth on the area, it is necessary to assess that growth within the context of growth trends in the Study Area that have been occurring or are expected in the future.

Key findings include:

1. Even without the added employment and population caused by the addition of personnel, operations and activities at the Arsenal, the PSA has been experiencing significant growth and is expected to continue doing so. While the current economic slowdown is impacting all portions of the nation, this is expected to be a comparatively short-term condition (when considered in terms of long-term development trends) with highly desirable areas such as the greater Huntsville area (including all of the PSA) returning to more robust levels of growth.
2. This growth will be reflected in additional residential development, places of employment, and retail and service establishments to serve the growing population and business base. BRAC-related growth will add to the already significant level of population and housing growth that was occurring pre-BRAC. As is normal, population growth will in turn lead to demand for additional retail and service establishments and draw additional businesses

which seek to support other companies in the area and take advantage of the growing workforce.

3. Madison County and the City of Huntsville are nationally known for their “industrial development” opportunities including sites for manufacturing, offices, research and development, and distribution uses. This includes the world-renowned Cummings Research Park, where 500± acres remain for development; Jetplex Industrial Park (1,400± acres of which a substantial portion is in Limestone County but is adjacent to the City of Huntsville); Jetplex Industrial Park South (1,400± acres); and several smaller business or industrial parks with a combined availability of nearly 200 acres. Madison County is well positioned to accommodate future contractor growth caused by BRAC. Limestone and Morgan counties also have master-planned business park areas that may attract contractors supporting the Arsenal who do not need immediate proximity.
4. The City of Huntsville has residential subdivisions that would provide an inventory of approximately 19,000 dwelling units that have been approved or are in the process. Some of these will be attractive to and available for BRAC-related relocatees.
5. The City of Madison estimates that approximately one-third of the workers who relocated to the Arsenal as a result of the 1995 BRAC chose to locate in Madison because of its available housing stock for middle-income jobs in close proximity to the Arsenal. The city is planning its growth based on an assumption that it will capture a similar portion of the relocatees from the current BRAC because of the appeal of its housing stock for the higher wage jobs coming to the Arsenal or in support of it. A major aspect of growth management for Madison and other communities that will be impacted the most by BRAC-related growth is the continued planning and funding for necessary infrastructure, in particular, public utilities and road construction.
6. As both Huntsville and Madison continue to look for areas to expand their tax bases, adjacent areas with development potential will be of interest to both communities for possible annexation.
7. Future population and business growth in Huntsville, the City of Madison, and Madison County as a whole will continue to impact land-use patterns and transportation and utility infrastructure needs. The largest portion of direct BRAC-related growth is expected to occur in Madison County and its constituent communities. Transportation needs in Madison County will be impacted by BRAC-related growth in surrounding counties, in particular, from Limestone and Morgan counties, because workers and contractors must pass through Madison County to reach the Arsenal.
8. BRAC-related traffic passing through the Highway 20/I-565 corridor in Limestone County (particularly the area annexed by the City of Decatur) will exacerbate congestion from existing traffic and existing or planned development in this area.
9. Because of the multiple, convenient, transportation routes, Limestone County is a major source of workers for Madison County businesses, with nearly 9,000 workers commuting

to work in Madison County daily. This ease of transportation coupled with available housing opportunities are expected to cause some of those moving to the area for new jobs at the Arsenal, or support contractors, to reside in Limestone County. This population and business growth is expected to fuel demand for additional retail and service growth. In turn, this will create a need for additional or improved transportation and utility infrastructure, some but not all of which will be directly attributable to BRAC.

10. The City of Decatur hopes to attract about 10% of the households who relocate to the area to fill the new jobs at the Arsenal. This is consistent with experience from the 1995 BRAC.
11. Population growth in Morgan County caused by BRAC relocatees and related business growth from companies seeking to serve new commands and operations at Redstone Arsenal or related contractors, will impact many aspects of Morgan County's future planning, infrastructure and service needs.
12. Residential development has been and will continue to be the most noticeable growth trend and land use in the PSA for the foreseeable future. The existing or anticipated inventory of lots and housing starts should mean those moving to the area as a result of BRAC 2005 will not have a major problem finding housing for sale, particularly if residential real estate demand in the PSA has diminished due to the current national economic slowdown.
13. Zoning regulations and community comprehensive plans in the PSA's constituent communities appear to be supportive of well-planned and managed growth.
14. The lack of such regulations and plans in unincorporated areas makes both analysis of past growth trends and management of future growth difficult. The counties in the PSA should be planning for future growth management now rather than risking possible adverse effects from unmanaged growth in the future. Protection of ground water quality is of particular concern. The counties in the PSA should become more proactive in managing development to assure that groundwater quality is not degraded and that the counties develop over time in accordance with a well thought-out plan, rather than in an unplanned, haphazard, and potentially undesirable manner.
15. Neither Huntsville nor Madison County officials have expressed concern about potential incompatibilities with land uses at the Arsenal. New development and activities within the Arsenal are consistent with past uses, which are familiar to residents of surrounding neighborhoods. In particular, the Enhanced Use Lease area to be developed in the northern portion of the Arsenal is a business park within the Arsenal that is a logical extension of the Cummings and Thornton Research Parks to the north.
16. If substantial new development occurs in Morgan County immediately south of the Arsenal, there may be concern about noise and vibration from explosions, but the likelihood of large-scale development in this area is currently small due to the lack of public utilities. Morgan County should consider the establishment of zoning regulations or a development ordinance to preclude this kind of potential conflict in the future. This will require authorization by the Alabama Legislature to enact county land use regulations.

Similarly, the area of Madison County east of the Arsenal is expected to continue high levels of growth, and growth management for this area should be a high priority.

17. From the Arsenal's perspective, no current or proposed surrounding land uses are incompatible with Arsenal operations. However, continuing care must be taken in the future to assure that off-post development does not create encroachment issues for Arsenal operations.

RECOMMENDATIONS

1. County Comprehensive Development Plans, including a detailed Natural Resource Inventory, should be prepared and implemented by Madison, Morgan, and Limestone Counties. This may take changes in state statutes or authorization by the State Legislature to be allowed. Preparation of such Comprehensive Development Plans typically cost in the \$125,000 - \$150,000 range.
2. A structured approach should be developed, with quarterly meetings held between representatives of Redstone Arsenal, the City of Huntsville, and Madison and Morgan Counties to identify and resolve any potential encroachment or land-use issues that could have a negative impact on either the Arsenal or surrounding neighborhoods.