

Section 3 Hazard Identification/Risk Assessment

Table 3.1 Summary of Plan Updates (Section 3)

| Section | | Modifications |
|---------|-------------------------|---|
| 3.1 | Hazard Exposure Profile | <ul style="list-style-type: none"> Restructured, updated and expanded data Newer maps |
| 3.2 | Hazard List | <ul style="list-style-type: none"> Restructured and re-defined hazards Re-defined Severe Storms as Thunderstorms/lightning and Windstorm. Earthquakes and Landslides were deleted from the hazard list. Dam and Levees Failures, Hurricanes and Coastal Storms, and Winter Storms and Freezes were placed in lower risk categories. |
| 3.3 | Risk Matrix | <ul style="list-style-type: none"> Critical data was used to determine hazard threats – history, vulnerability, maximum threat or severity, and threat or frequency. |
| 3.4 | Top Hazards | <ul style="list-style-type: none"> Newer hazard list and vulnerability ranking. |

3.1 Hazard Exposure Profile

An important component of the planning process is examining the composition of the community. Looking at what is at risk of a disaster not only provides insight into a community’s potential post-disaster losses but also emphasizes the need for protecting its assets. A Hazard Exposure Profile examines all of the important assets of a community, including demographics, critical facilities, and structures. The following are some key assets of Autauga County that are at risk of a disaster. Map 3-A shows the geographical area of the Hazard Exposure Profile for Autauga County.

Autauga County Hazard Exposure Profile

| | |
|--------------------------|--|
| Area (square miles) | 604 square miles (1,566 km ²) |
| | 596 square miles (1,544 km ²) of it is land, and 8 square miles (22 km ²) of it (1.40%) is water |
| Population (2000 Census) | 43,671 50,364 (2008 Estimate) |
| Households | 16,003 |
| Families | 12,354 |
| Miles of Roads | 1075 |

| | |
|-----------------------------|----|
| Miles of Interstate | 16 |
| Miles of Railroad | 45 |
| Airports (#) | 1 |
| Hospitals (#) | 1 |
| Jail (#) | 1 |
| Medical Clinic (#) | 2 |
| Personal Care Home (#) | 2 |
| Police Station (#) | 3 |
| School (#)-public/private | 17 |
| Sewage Treatment Plants (#) | 2 |
| Utility Providers (#) | 6 |
| Fire/Rescue (#) | 14 |
| Bridges (#) | 71 |
| Historic Places (#) | 27 |

After a preliminary Exposure Profile was completed for Autauga County, several of the County's assets were examined in more detail. The County's demographics, critical facilities, and structure type, age, and value were examined further.

3.1.1 Demographics

According to the 2000 Census Autauga County had a population of 43,671. In 2008 the County had an estimated population of 50,364. Between 1990 and 2000 Autauga County's population has increased. Table 3.1 shows the population of Autauga County from 1990-2008.

**Table 3.1
Population Change for Autauga County, 1990-2000**

| | <u>2008</u> | <u>% of Change</u> | <u>2000</u> | <u>% of Change</u> | <u>1990</u> |
|------------------------|-------------|--------------------|-------------|--------------------|-------------|
| Autauga County | 50,364 | 15% | 43,671 | 28% | 34,222 |
| Autauga County – rural | 17,337 | -29% | 18,433 | 6% | 13,804 |
| Autaugaville* | 871 | 6% | 820 | 20% | 681 |
| Billingsley* | 122 | 6% | 115 | -23% | 150 |
| Prattville** | 32,034 | 32% | 24,303 | 24% | 19,587 |

Source: US Census Bureau

* 2008 estimate

** includes Elmore County population

According to the US Census, one third of Autauga County’s population is between the ages of 20-44. However, between 1990 and 2000, those population ages 35 and lower have been decreasing while generally those ages 35 and above have been increasing. Table 3.2 provides a look at Autauga County’s median age groups.

**Table 3.2
Median Age by Sex**

| | |
|----------------|------|
| Autauga County | 35.1 |
| Male | 34.3 |
| Female | 35.7 |

Source: U.S. Census Bureau

3.1.2 Critical Facilities

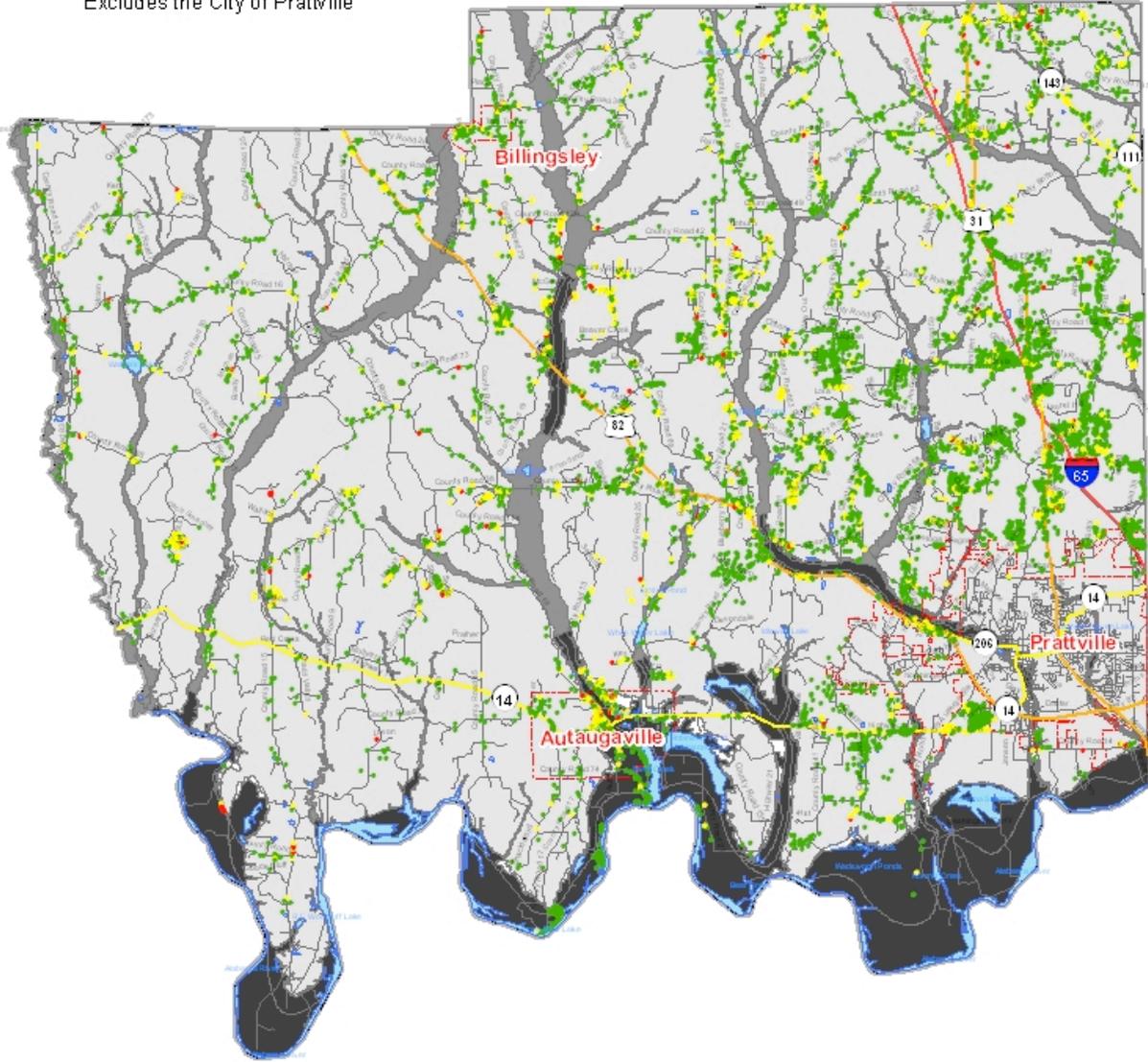
A critical facility is a structure that is essential to the community due to the products and services provided there. The critical facilities identified in Autauga County are fire or rescue facilities, hospitals, jails, medical clinics, personal care homes, police stations, schools, sewage treatment plants, and utility providers. The locations of critical facilities were identified by examining address lists, 9-1-1 address data, and aerial photographs. Map 3-B shows the location of these facilities in the County. UPMC Autauga Memorial is the only hospital in the County. It has 59 beds with units for medial, surgical, intensive care, coronary care, telemetry, and palliative care services. There are 6 public water providers and 3 public sewerage entities in the County.

**Table 3.3
Autauga County Critical Facilities**

| | |
|---------------------------|----|
| Fire/Rescue | 14 |
| Hospital | 1 |
| Jail | 1 |
| Medical Clinics | 2 |
| Police Stations | 3 |
| Schools | 17 |
| Sewage Treatment Facility | 3 |
| Utility Providers | 6 |

Housing Condition Map Autauga County, Alabama

Source: CARPDC Autauga County Housing Study, 2007
 Excludes the City of Prattville



Legend

- Interstate Highway
- United State Highway
- Alabama State Highway
- Other Roads
- Water

Housing Condition

- Standard Structures
- Deteriorated Structures
- Dilapidated Structures

Flood Zone Areas

- Zone X
- Zone A
- Zone AE
- 0.2 % ANN. CHANCE FLD. HAZARD



May 2009

3.1.3 Structures

To determine what in Autauga County is at risk of a disaster, it is important to examine the makeup of its structures. Using addressable structures GIS data provided by Autauga County 9-1-1, the composition of addressable structures in Autauga County was determined. Over 90% of all the structures in the County are residential. Of the residential structures 16% of those are manufactured homes. Commercial and industrial structures make up 5.5% of all structures while critical facilities make up only 0.4%. Table 3.4 shows the percentage of types of structures in the County.

**Table 3.4
Autauga County Addressable Structures**

| <u>Type</u> | <u>Percent</u> |
|-----------------------|----------------|
| Residential | 92.8% |
| Commercial/Industrial | 5.5% |
| Critical Facilities | .4% |
| Other | 1.3% |

In addition to the structure type, it is also important to study the age of the structure. Older structures often were not built to withstand disasters such as flooding and wind. According to the 2000 Census 4.1% of Autauga County's housing units were built before 1940. Table 3.5 shows a detailed breakdown of housing unit age by year. Information on structure age for non-housing units was not available.

**Table 3.5
Year Built
Autauga County Age of
Housing Units**

| | |
|--------------------------|--------|
| Total: | 16,003 |
| Owner occupied: | 12,935 |
| Built 1999 to March 2000 | 502 |
| Built 1995 to 1998 | 2,149 |
| Built 1990 to 1994 | 1,809 |
| Built 1980 to 1989 | 2,326 |
| Built 1970 to 1979 | 2,955 |
| Built 1960 to 1969 | 1,714 |
| Built 1950 to 1959 | 690 |
| Built 1940 to 1949 | 335 |
| Built 1939 or earlier | 455 |
| Renter occupied: | 3,068 |

| | |
|--------------------------|-----|
| Built 1999 to March 2000 | 61 |
| Built 1995 to 1998 | 459 |
| Built 1990 to 1994 | 191 |
| Built 1980 to 1989 | 513 |
| Built 1970 to 1979 | 807 |
| Built 1960 to 1969 | 477 |
| Built 1950 to 1959 | 259 |
| Built 1940 to 1949 | 98 |
| Built 1939 or earlier | 203 |

U.S. Census Bureau Census 2000

The final structural aspect that was examined was cost. A structures cost is important in gaining a complete picture of what is at risk of a disaster.

According to the 2000 Census the median cost of an owner-occupied housing unit in Autauga County was \$94,800. Table 3.6 shows the housing unit cost for owner-occupied units in Autauga County.

Table 3.6
Specified Owner- Occupied Units

| | Specified Owner- Occupied Units | Precentag of total |
|-----------------------------|--|-----------------------|
| Total | 8,557 | 100.00% |
| Less than \$10,000 | 51 | 0.60% |
| \$10,000 to \$14,999 | 59 | 0.69% |
| \$15,000 to \$19,999 | 52 | 0.61% |
| \$20,000 to \$24,999 | 87 | 1.02% |
| \$25,000 to \$29,999 | 131 | 1.53% |
| \$30,000 to \$34,999 | 70 | 0.82% |
| \$35,000 to \$39,999 | 123 | 1.44% |
| \$40,000 to \$49,999 | 285 | 3.33% |
| \$50,000 to \$59,000 | 473 | 5.53% |
| \$60,000 to \$69,999 | 810 | 9.47% |
| \$70,000 to \$79,999 | 818 | 9.56% |
| \$80,000 to \$89,999 | 900 | 10.52% |
| \$90,000 to \$99,999 | 869 | 10.16% |

| | | |
|--|-----------------|--------|
| \$100,000 to \$124,999 | 169 | 13.66% |
| \$125,000 to \$149,999 | 1,128 | 13.18% |
| \$150,000 to \$174,999 | 631 | 7.37% |
| \$175,000 to \$199,999 | 365 | 4.27% |
| \$200,000 to \$249,999 | 298 | 3.48% |
| \$250,000 to \$299,999 | 94 | 1.10% |
| \$300,000 to \$399,999 | 93 | 1.09% |
| \$400,000 to \$499,999 | 41 | 0.48% |
| \$500,000 to \$749,999 | 0 | 0.00% |
| \$750,000 to \$999,999 | 5 | 0.06% |
| \$1,000,000 or more | 5 | 0.06% |
| Specified Owner-Occupied Values | | |
| Median Value | \$94,800 | |
| Median Value Manufactured Homes | \$25,500 | |

The County has a total of 15,644 buildings with a building exposure by occupancy type for Autauga County.

**Table 3.7
Building Exposure By Occupancy Type for Autauga County**

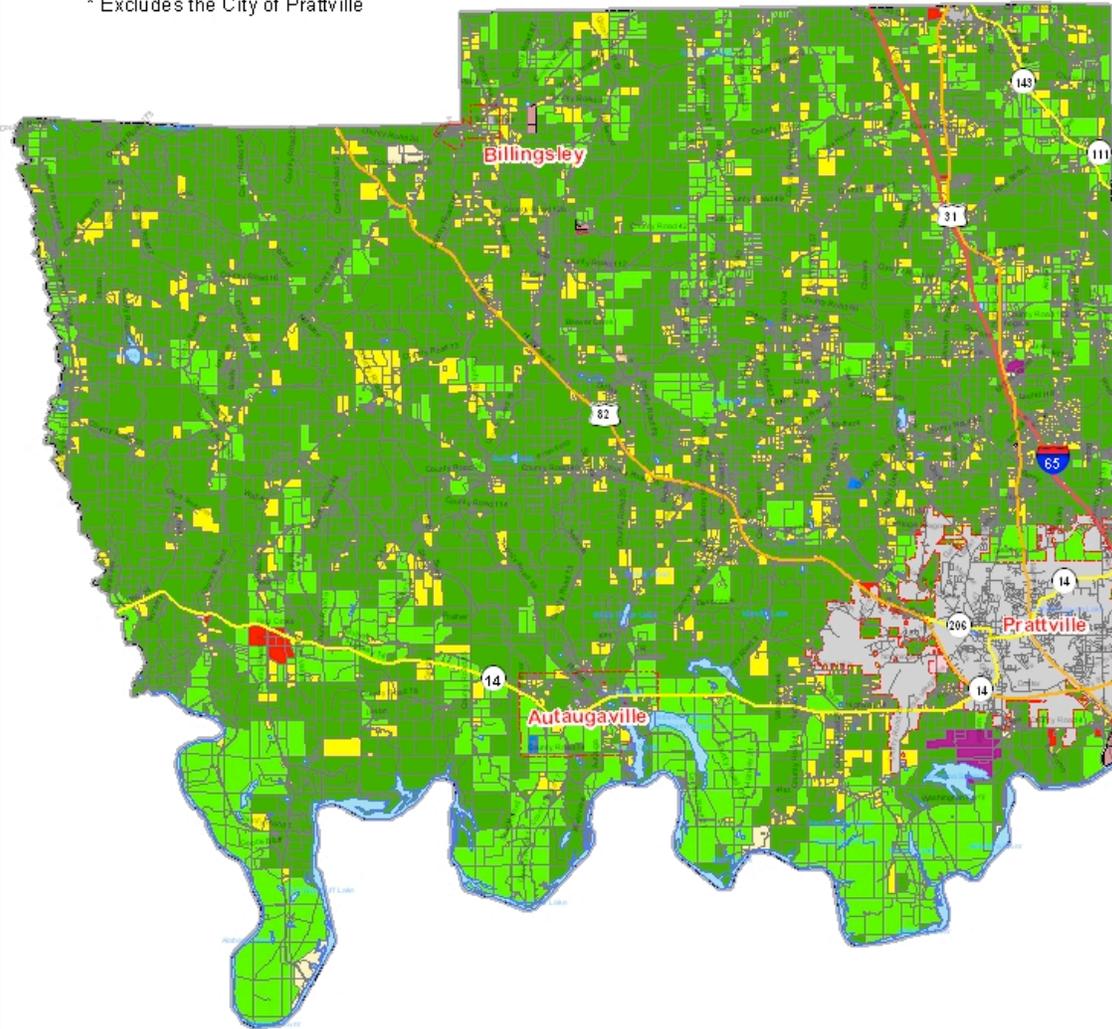
| Occupancy | Exposure(\$1000) | Percent of Total |
|------------------|-------------------------|-------------------------|
| Residential | 2,223,338 | 84.1% |
| Commercial | 244,198 | 9.2% |
| Industrial | 82,742 | 3.1% |
| Agricultural | 23,835 | 0.9% |
| Religion | 55,928 | 2.1% |
| Government | 3,849 | 0.1% |
| Education | 11,224 | 0.4% |
| Total | 2,645,114 | 100.0% |

3.1.4 Land Use

Autauga County's land use is predominantly forest and agricultural. Two thirds of the County is forested and nearly one fourth of the County is agricultural areas and open space. Only seven percent of the County is developed. Table 3.8 shows the land uses in Autauga County as of April 2006. Map 3-8 shows Autauga County land use types.

Existing Land Use Map Autauga County, Alabama

Source: CARPDC Autauga County Land Use Study, 2007
* Excludes the City of Prattville



Legend

- | | | |
|-----------------------|---------------------------------------|--------------------------------|
| Interstate Highway | Agriculture | Mining |
| United State Highway | Commercial | Residential mobile home |
| Alabama State Highway | Cultural, entertainment, recreational | Residential large-family |
| Other Roads | Government | Residential manufactured homes |
| Water | Industrial, Manufacturing | Undeveloped |
| | Institutional | Utilities |
| | Junk Yard | |



May 2009

Table 3.8

| Autauga County Landuse Percentages | | |
|---|--------------------|----------------|
| Landuse Type | Parcels | Percent |
| Agricultural-pasture, active farming, fields, cattle | 100503.2978 | 18.47% |
| Commercial-retail, wholesale, trade | 1388.499058 | 0.26% |
| Cultural, Entertainment, Recreational (Parks, muse | 413.621975 | 0.08% |
| Governmental-fire stations, police station, post office | 172.971653 | 0.03% |
| Industrial, Manufacturing-processing plant, | 1359.404561 | 0.25% |
| Institutional-churches, schools, hospitals, banks | 654.992579 | 0.12% |
| Junk Yard-Landfill | 12.736545 | 0.0023% |
| Mining-shaft or open pit | 649.876947 | 0.12% |
| Residential - Manufactured Home Parks | 352.872236 | 0.06% |
| Residential - Multi-family (3 or more units) | 2.743015 | 0.0005% |
| Residential single-family (detached and duplexes) | 53772.97736 | 9.88% |
| Undeveloped Lands and Waters-forest, no signs of development | 324830.4083 | 59.70% |
| Utilities, Communications, Transportation-bus | 1669.414772 | 0.31% |
| Road Right-of-Way | 55205.74486 | 10.15% |
| River and Streams | 3146.086038 | 0.58% |
| Total: | 544135.6477 | 100.00% |

3.2 Hazard List

The next step in the hazard mitigation planning process was to identify those hazards that Autauga County is at risk of experiencing. The Hazard Mitigation Planning Committee reviewed this list of and hazards as well as the list of standard hazards in the NFPA 1600. The committee also reviewed the hazard exposure profile of the County. After review and discussion, it was decided that agricultural hazards should be included. Table 3.9 shows the final list of hazards.

**Table 3.9
Natural Hazards**

| | |
|-----------------------|-------------------------|
| Tornado | Thunderstorm/Lighting |
| Windstorm | Flooding-riverine/flash |
| Drought and Heat Wave | Wild Fires |
| Hurricane | Winter Storm – ice/hail |
| Dam Failure | Tropical Storm |

3.3 Risk Matrix

Although Autauga County is at risk of potentially experiencing all of these hazards, a few of the hazards have a higher probability of occurring than others. A series of four criteria was developed in order to rank the hazards.

- 1. History:** The record of past events of a hazard can provide valuable information on the frequency and severity of that hazard.
- 2. Vulnerability:** Vulnerability is how susceptible a community is to destruction, injury, or death. The degree of vulnerability can vary due to location and immobility.
- 3. Maximum Threat or Severity:** The worst case disaster should be considered for each hazard. This provides an upper boundary for the damage and loss that may occur.
- 4. Probability or Frequency:** How often a hazard is expected to occur is important in determining its risk. An annual event that causes minor damage may be more significant than a major event that only occurs every 50-100 years.

A risk matrix is often used to help determine which hazards pose the greatest threat to a community. Figure 3.1 is the risk matrix that was developed to help rank the list of hazards by frequency and severity. Criteria for categorizing frequency and severity were developed to assist in the ranking process.

**Figure 3.1
Risk Matrix**

FREQUENCY

| | | | | |
|----------|----------|----------|----------|-----------------|
| C | B | A | A | High |
| C | B | B | A | Moderate |
| D | C | B | B | Low |
| D | D | C | C | Very Low |

Minor Serious Extensive Catastrophic



Severity

Risk Frequency

- *High Frequency:* events that occur more frequently than once in 10 years
- *Moderate Frequency:* events that occur from once in 10 years to once in 100 years
- *Low Frequency:* events that occur from once in 100 years to once in 1,000 years
- *Very Low Frequency:* events that occur less frequently than once in 1,000 years

Severity Categories

- Based on Potential, Rated From Catastrophic to Minor
- Fatalities
- Injuries
- Property Damage
- Business Interruption
- Environmental/Economic Impact

- Catastrophic - May cause death, loss of facility/asset, major loss of property; or grave damage to local, state or national service or command interests.
- Extensive - May cause severe injury, illness, property damage; or damage to local, state or national service or command interests.
- Serious- May cause minor injury, illness, property damage; or damage to local, state or national, service, or command interests.
- Minor - Minimal threat low in severity: relatively low in severity or danger

Each Hazard Mitigation Planning Committee Member completed the risk matrix for every hazard on the list, keeping not only frequency and severity in mind but also considering history and vulnerability as well. The committee then discussed their thoughts and came to an agreement on the results and ranking for each hazard. Table 3.10 shows the hazard ranking that was agreed upon.

**Table 3.10
Hazard Risk Matrix Ranking**

Category A (High Risk/High Priority)

- 1 Tornado
- 2 Windstorm

Category B (Moderate-High Risk/Prompt Action Priority)

- 3 Drought and Heat Wave
- 4 Wild Fires
- 5 Thunderstorm/lightning
- 6 Flooding – riverine/flash

Category C (Significant Risk/Further Consideration Priority)

- 7 Hurricane /tropical storm

Category D (Low Risk/Advisory Priority)

- 8 Dam Failure
- 9 Winter storm – ice/hail

This plan will focus in detail on the top six ranking hazards: Tornado, Windstorm, Drought, Wild Fires, Thunderstorm/lighting, and Flooding–riverine/flash. Some of the other hazards will be discussed briefly in the plan in the Vulnerability Analysis section of this plan.

3.4 Top Hazards

The Hazard Mitigation Planning Committee, municipality supervisors and chairmen, and the public discussed the hazards that could affect Autauga County. Based on history, vulnerability, frequency, and severity a risk matrix analysis was completed to rank the hazards. The top six ranked hazards are the main focus of this plan. These hazards are:

- 1. Tornado
- 2. Windstorm
- 3. Drought and Heat Wave
- 4. Wild Fires
- 5. Thunderstorm/lightning
- 6. Flooding–riverine/flash

Before determining the vulnerability and loss associated with these hazards, the history and probability of these events must first be examined. The Vulnerability Analysis section of this plan addresses the vulnerability and loss of each hazard. The hazards in Categories C-D will not be examined in detail in this plan.

DRAFT