Multi Jurisdiction
Hazard Mitigation Plan

Pike County, Alabama

and the
Municipalities of

Banks
Brundidge
Goshen
Troy

May, 2005
Final Plan

Multi Jurisdiction Hazard Mitigation Plan

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RESOLUTION

Adoption of "Multi Jurisdiction Hazard Mitigation Plan,
Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy"

WHEREAS, the Pike County Emergency Management Agency has engaged in extensive studies of the natural hazards affecting Pike County; and

WHEREAS, the Pike County Emergency Management Agency, with guidance from the Pike County Local Emergency Management Planning Committee, has prepared the Multi Jurisdiction Hazard Mitigation Plan; and

WHEREAS, the Town of Banks is represented on the Pike County Local Emergency Management Planning Committee; and

WHEREAS, the goals of the Multi Jurisdiction Hazard Mitigation Plan are to: a) reduce the loss of life, b) decrease repetitive property damage caused by natural hazards, and c) provide leadership and coordination to encourage all levels of government and public, non-profit and private organizations in Pike County to undertake mitigation activities to minimize potential disasters and to employ mitigation as a part of recovery actions following disasters; and

WHEREAS, the strategies of the Multi Jurisdiction Hazard Mitigation Plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and

WHEREAS, the adoption of the "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" would be in the best interest and for the protection of the citizens of the Town of Banks.

NOW THEREFORE BE IT RESOLVED by the Town of Banks Council that the document entitled "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" and all official maps pertaining thereto are hereby adopted this ____ day of _____, 2005.

Adopted and approved by the Town of Banks on this ____ day of _____, 2005.

_____
Mayor

Attest

_____ _____
Clerk Date

RESOLUTION

Adoption of "Multi Jurisdiction Hazard Mitigation Plan,
Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy"

WHEREAS, the Pike County Emergency Management Agency has engaged in extensive studies of the natural hazards affecting Pike County; and

WHEREAS, the Pike County Emergency Management Agency, with guidance from the Pike County Local Emergency Management Planning Committee, has prepared the Multi Jurisdiction Hazard Mitigation Plan; and

WHEREAS, the City of Brundidge is represented on the Pike County Local Emergency Management Planning Committee; and

WHEREAS, the goals of the Multi Jurisdiction Hazard Mitigation Plan are to: a) reduce the loss of life, b) decrease repetitive property damage caused by natural hazards, and c) provide leadership and coordination to encourage all levels of government and public, non-profit and private organizations in Pike County to undertake mitigation activities to minimize potential disasters and to employ mitigation as a part of recovery actions following disasters; and

WHEREAS, the strategies of the Multi Jurisdiction Hazard Mitigation Plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and

WHEREAS, the adoption of the "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" would be in the best interest and for the protection of the citizens of the City of Brundidge.

NOW THEREFORE BE IT RESOLVED by the City of Brundidge Council that the document entitled "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" and all official maps pertaining thereto are hereby adopted this ____ day of _____, 2005.

Adopted and approved by the City of Brundidge on this ____ day of _____, 2005.

_____
Mayor

Attest

_____ _____
Clerk Date

RESOLUTION

Adoption of "Multi Jurisdiction Hazard Mitigation Plan,
Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy"

WHEREAS, the Pike County Emergency Management Agency has engaged in extensive studies of the natural hazards affecting Pike County; and

WHEREAS, the Pike County Emergency Management Agency, with guidance from the Pike County Local Emergency Management Planning Committee, has prepared the Multi Jurisdiction Hazard Mitigation Plan; and

WHEREAS, the Town of Goshen is represented on the Pike County Local Emergency Management Planning Committee; and

WHEREAS, the goals of the Multi Jurisdiction Hazard Mitigation Plan are to: a) reduce the loss of life, b) decrease repetitive property damage caused by natural hazards, and c) provide leadership and coordination to encourage all levels of government and public, non-profit and private organizations in Pike County to undertake mitigation activities to minimize potential disasters and to employ mitigation as a part of recovery actions following disasters; and

WHEREAS, the strategies of the Multi Jurisdiction Hazard Mitigation Plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and

WHEREAS, the adoption of the "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" would be in the best interest and for the protection of the citizens of the Town of Goshen.

NOW THEREFORE BE IT RESOLVED by the Town of Goshen Council that the document entitled "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" and all official maps pertaining thereto are hereby adopted this ____ day of _____, 2005.

Adopted and approved by the Town of Goshen on this ____ day of _____, 2005.

_____
Mayor

Attest

_____ _____
Clerk Date

RESOLUTION

Adoption of "Multi Jurisdiction Hazard Mitigation Plan,
Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy"

WHEREAS, the Pike County Emergency Management Agency has engaged in extensive studies of the natural hazards affecting Pike County; and

WHEREAS, the Pike County Emergency Management Agency, with guidance from the Pike County Local Emergency Management Planning Committee, has prepared the Multi Jurisdiction Hazard Mitigation Plan; and

WHEREAS, the City of Troy is represented on the Pike County Local Emergency Management Planning Committee; and

WHEREAS, the goals of the Multi Jurisdiction Hazard Mitigation Plan are to: a) reduce the loss of life, b) decrease repetitive property damage caused by natural hazards, and c) provide leadership and coordination to encourage all levels of government and public, non-profit and private organizations in Pike County to undertake mitigation activities to minimize potential disasters and to employ mitigation as a part of recovery actions following disasters; and

WHEREAS, the strategies of the Multi Jurisdiction Hazard Mitigation Plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and

WHEREAS, the adoption of the "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" would be in the best interest and for the protection of the citizens of the City of Troy.

NOW THEREFORE BE IT RESOLVED by the City of Troy Council that the document entitled "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" and all official maps pertaining thereto are hereby adopted this ____ day of _____, 2005.

Adopted and approved by the City of Troy on this ____ day of _____, 2005.

_____
Mayor

Attest

_____ _____
Clerk Date

RESOLUTION

Adoption of "Multi Jurisdiction Hazard Mitigation Plan,
Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy"

WHEREAS, the Pike County Emergency Management Agency has engaged in extensive studies of the natural hazards affecting Pike County; and

WHEREAS, the Pike County Emergency Management Agency, with guidance from the Pike County Local Emergency Management Planning Committee, has prepared the Multi Jurisdiction Hazard Mitigation Plan; and

WHEREAS, Pike County is represented on the Pike County Local Emergency Management Planning Committee; and

WHEREAS, the goals of the Multi Jurisdiction Hazard Mitigation Plan are to: a) reduce the loss of life, b) decrease repetitive property damage caused by natural hazards, and c) provide leadership and coordination to encourage all levels of government and public, non-profit and private organizations in Pike County to undertake mitigation activities to minimize potential disasters and to employ mitigation as a part of recovery actions following disasters; and

WHEREAS, the strategies of the Multi Jurisdiction Hazard Mitigation Plan are to identify and characterize hazards, assess risk, prioritize and implement mitigation measures; and

WHEREAS, the adoption of the "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" would be in the best interest and for the protection of the citizens of Pike County.

NOW THEREFORE BE IT RESOLVED by the Pike County Commission that the document entitled "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" and all official maps pertaining thereto are hereby adopted this ____ day of _____, 2005.

Adopted and approved by the Pike County Commission on this ____ day of _____, 2005.

_____
Chairman

Attest

_____ _____
Clerk Date

Multi Jurisdiction Hazard Mitigation Plan

Pike County
and the Municipalities of
Banks, Brundidge, Goshen, and Troy, Alabama

Introduction

Mitigation Planning Requirement

Under the requirements of Section 322 of the Stafford Act and the Code of Federal Regulations 44 CFR Part 201 local governments must prepare and adopt a local hazard mitigation plan to qualify for future federal disaster assistance. Federal funding assistance for local mitigation planning is being provided for Pike County through the Alabama Emergency Management Agency under a contract with the South Central Alabama Development Commission (SCADC). Municipalities in Pike County must be included in the Pike County mitigation plan because funding assistance is not currently available to prepare individual municipal mitigation plans. In order for the multi-jurisdictional mitigation plan to be approved, all municipal governments, Banks, Brundidge, Goshen and Troy, must participate in the Pike County mitigation planning process (44 CFR201.6 (a)(3)) and formally adopt the final local hazard mitigation plan (44 CFR 201.6(c)(5)). Any local government jurisdiction not participating in the plan will be ineligible for pre-disaster projects (e.g. warning sirens) and post disaster assistance (e.g. repairs of damaged infrastructure).

Purpose and Content of Mitigation Plan

The purpose of this document is to provide information on policies and procedures and to comply with the requirements for local mitigation planning as required under Section 322 of the Stafford Act (42U.S.C. 5165) and 44 CFR Part 201.

The purposes of the mitigation plan are to:

(1) Educate citizens and officials about the requirements, policies and procedures related to local hazard mitigation planning;
(2) Identify natural hazards that impact the local governments,
(3) Identify actions and activities to reduce loss from those hazards; and
(4) Establish a coordinated process to implement the plan.

A local mitigation plan must contain the following components.
(1) Description of the planning process;
(2) Risk assessment;
(3) Mitigation strategy; and
(4) Description of the plan maintenance strategy.

Planning Process

Planning Process Requirements

The local hazard mitigation plan must include a description of the planning process used to develop the plan that describes how the plan was prepared, who was involved in the planning process, and how the public was involved (44 CFR 201.6(c)(1)). Section 44 CFR 201.6(b) describes several requirements that must be documented to demonstrate that the local mitigation planning process included open public involvement in a process that provided a comprehensive approach to reducing the effects of natural disasters.

(1) In accordance with 44 CFR 201.6(b)(1) the local mitigation planning process and report must provide and document that the public was given an opportunity to comment on the plan. As a minimum one public meeting must be held during the drafting stage and one public meeting must be held on the completed plan. A process also needs to be instituted to document efforts to solicit comments from those residents who did not attend the public meetings.

(2) In accordance with 44 CFR 201.6(b)(2) the local mitigation planning process and report must provide and document that the following types of interest groups were invited and encouraged to actively participate in the planning process.
   (i) Neighboring communities;
   (ii) Local and regional agencies involved in hazard mitigation activities;
   (iii) Agencies that have the authority to regulate development;
   (iv) Businesses;
   (v) Academia; and
   (vi) Other private and non-profit interests.

(3) In accordance with 44 CFR 201.6(b)(3) the local hazard mitigation planning process and report must include documentation that appropriate existing plans, studies, reports, and technical information were reviewed and incorporated into the local mitigation plan.

Planning Process Implementation

In accordance with Section 44 CFR 201.6(c)(1) the following paragraphs describe the planning process used to develop the local hazard mitigation plan, including how it was prepared, who was involved in the process, and how the public was involved.

Initial Plan Preparation

The planning staff of the South Central Alabama Development Commission (SCADC) conducted a series of meetings with Mr. Larry Davis, Director of the Pike County Emergency Management Agency to gather information for the draft plan. Contacts were also made with various other local and state agencies and departments to request information. The SCADC planning staff then prepared the initial draft of the "Multi Jurisdiction Hazard Mitigation Plan" for Pike County and the municipalities therein. When the draft plan was complete the SCADC requested that the Pike County Emergency Management Agency call a meeting of the Local Emergency Planning Council to present the plan. That meeting was conducted on June 15, 2004. (See Local Emergency Planning Council below.) No revisions to the risk assessment were

suggested at that meeting. However, additional mitigation actions were discussed and subsequently added to the draft plan.

Following the meeting with the Local Emergency Planning Council the staff of SCADC began requesting time on the agendas of regular scheduled meetings of the Pike County Commission and each of the municipalities to discuss the mitigation planning process, present the draft plan and request input from local officials. (See Local Governments below.) Two meetings were held with each Town and City Council and one meeting with the Pike County Commission.

During this time period SCADC submitted a copy of the draft plan to the Alabama Emergency Management Agency as a preliminary progress report. The staff of SCADC continued working in conjunction with the Director of the Pike County Emergency Management Agency to refine the draft plan. A revised draft plan was produced for use at the meetings with local governments. (See Local Governments below.) The first public meeting was held on September 8, 2004 to solicit public comments on the draft plan. (See Public Involvement, Public Meeting – Draft Stage later in this section.)

The draft plan was again amended by the staff of SCADC to include the additional input from the local governments and initial comments received from the Alabama Emergency Management Agency. The second public meeting on the plan was then scheduled. (See Public Involvement, Public Meeting – Completion Stage later in his section.) The "Multi Jurisdiction Hazard Mitigation Plan" was then submitted to the Pike County Local Emergency Planning Council for final review and comment. The Local Emergency Management Planning Council proposed adding four community shelters, one in each municipality, and accepted the plan for adoption by the local governments.

The final plan was submitted to the Alabama Emergency Management Agency, other entities, neighboring communities, local hazard mitigation agencies and agencies responsible for regulation of development for review and comment. (See Other Entities, Neighboring Communities and Local and Regional Hazard Mitigation Agencies, and Agencies Responsible for Development below.) It is noted that businesses, academia and other private and non-profit agencies are represented on the Pike County Local Emergency Planning Council. (See Local Emergency Planning Council below.) To date no additional comments have been received. In the event comments are received they will be considered by the Local Emergency Planning Council as a part of the plan maintenance process.

The version of the "Multi Jurisdiction Hazard Mitigation Plan" accepted by the Pike County Local Emergency Planning Council was then submitted to local governments for adoption. A representative of SCADC attended regularly scheduled council and commission meetings at which the plan was considered to answer any questions. The plan has been formally adopted by all participating governments. (See Local Governments below.)

The adopted version of the "Multi Jurisdiction Hazard Mitigation Plan, Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy" has been submitted to the Alabama Emergency Management Agency and the Federal Emergency Management Agency for acceptance and the plan maintenance process is underway locally.

Process Participation

In order to develop a more comprehensive approach to reducing the effects of natural disasters Section 44 CFR 201.6(b) requires that the local hazard mitigation plan document involvement in the planning process by the local jurisdictions and the public. The methods by which these requirements were addressed are discussed in the following paragraphs.

(1) Pike County Local Emergency Planning Council

In compliance with Section 44 CFR 201.6(b)(1) Pike County used the Pike County Local Emergency Planning Council as an integral part of the planning process. The Council is composed of a diverse mixture of public and private agencies and businesses in Pike County and provides a broad base of input for the planning process. The composition of the Local Emergency Planning Council is summarized in the attached membership roster.

A meeting with the Local Emergency Planning Council was held on June 15, 2004. Copies of the initial draft plan were mailed to all members of the Local Emergency Planning Council with the notice of the meeting. A copy of the sign-in sheet from the June 15, 2004 meeting is on file at the Pike County Emergency Management Agency. It is noted that representatives from various county businesses and academia attended the June 15 meeting. The draft plan was presented by the South Central Alabama Development Commission staff representative. It was suggested that emergency generators be secured for use by local water systems during emergencies. With this modification the plan was considered ready for initial presentation to the local governments. Representatives of the new Walmart Distribution Center also agreed to place a copy of their Tier Two Plan on file with the Pike County Emergency Management Agency. A copy of the Walmart Tier Two Plan is now on file at the Pike County Emergency Management Agency.

Another meeting with the Local Emergency Planning Council was conducted on June 9, 2005. At this meeting the Local Emergency Planning Council reviewed the final plan and added one community shelter in each of the four municipalities. With this modification the Council accepted the plan as ready for adoption by local governments. A copy of the sign-in sheet from the June 9, 2005 meeting is on file at the Pike County Emergency Management Agency.

The Council reviewed: a) the draft plan; b) local determinations of hazards most likely to impact local jurisdictions; c) proposed mitigation actions; and d) the completed plan prior to presentation to the local governments for adoption.

(2) Local Governments

To obtain effective participation by all local governments it was determined that a SCADC staff representative would attend regularly scheduled meetings of the Pike County Commission and the town and city councils. Participation by all local officials was enabled using this process because local officials faithfully attend the regular scheduled meetings of the council and County Commission.

Pike County LEPC List

Governments and Related Agencies

Town of Banks
Highway 29 South
P. O. Box 6666
Banks, AL 36005-6666

City of Brundidge
South Main Street
Brundidge, AL 36010

Brundidge Landfill (BFI)
P. O. Box 416
Brundidge, Alabama 36010

City of Brundidge
Wastewater Treatment Plant
South Main Street
Brundidge, AL 36010

City of Brundidge, Police and Fire Department
146 South Main Street
P. O. Box 638
Brundidge, AL 36010

Town of Goshen
505 Montgomery Street
P. O. Box 146
Goshen, AL 36034

Pike County Commission
P. O. Box 1147
Troy, AL 36081-1147

Pike County Engineer
P. O. Box 131
Troy, AL 36081

City of Troy
306 East Academy Street
Troy, AL 36081

City of Troy
Utility Department
306 East Academy Street
Troy, AL 36081

City of Troy
Police Department
306 East Academy Street
P. O. Box 589
Troy, AL 36081

City of Troy
Fire Department
P. O. Box 1153
Troy, AL 36081

Special Interest Organizations

American Red Cross, Pike County
404 E. Elm Street, Rear
Troy, AL 36081

Salem Troy Baptist Association
P. O. Box 242
Troy, AL 36081

Haynes Ambulance
217 Corman Avenue
Troy, AL 36081

Superintendent, Pike County Board of Education
101 West Love Street
Troy, AL 36081

Pike County Dept of Human Resources
717 S. Three Notch Street
Troy, AL 36081

Pike County Water Authority
13102 U. S. Highway 231 South
Troy, AL 36035

Springhill Volunteer Fire Department
6973 Alabama Highway 87
Troy, AL 36079

Superintendent, Troy City Schools
500 Elm Street Annex
P. O. Box 529
Troy, AL 36081-0529

Troy Regional Medical Center
1330 Highway 231 South
Troy, AL 36081

Troy University
Police Department
113 Hammill Hall
Troy, AL 36082

Private Enterprise

APAC Southeast, Inc.
P. O. Box 8888
Dothan, AL 36304

Alltel Communications
1239 Highway 231 South
Troy, AL 36081
or
Alltel Communications
6365 Atlanta Highway
Montgomery, AL 36117

Ameri Gas
P. O. Box 293
Greenville, AL 36037

AT&T Corporation
898 Marie Lane
Conyers, GA 30094

Bell South
1100 Peachtree Street, NE
Atlanta, GA 30309

Botts, Oil Co., Inc.
P. O. Box 393
Troy, AL 36081

Century Telephone
131 College Street
Brundidge, AL 36010

Cooperative Propane
P. O. Box 878
Andalusia, AL 36420

Couch Ready Mix
Inland Division, Troy Plant
Highway 21 South
Troy, Alabama 36079

Equity Group
Eufaula Division, LLC
57 Melvin Clark Road
Baker Hill, AL 36027

HB&G Building Products
P. O. Box 589
Troy, AL 36081

Lockheed Martin Missile and Fire Control
5500 County Road 37
Troy, AL 36081

Russell Corporation
P. O. Box 272
Alexander City, AL 35011-0272

Sanders Lead Co.
P. O. Box 707
Troy, AL 36081

KW Plastics (Sanders)
P. O. Box 707
Troy, AL 36081

Sirkorsky Support Services, Inc.
299 Airport Boulevard
P. O. Box 1087
Troy, AL 36081

Smurfit Stone
P. O. Box 457
Fernandina Beach, FL 32305

Wal-mart Distribution Center 7019
1005 Sarah Lott Boulevard
Brundidge, AL 36010

Wayne Farms
50 Henderson Highway
Troy, AL 36081

Meetings with each municipal and county governing body enabled a South Central Alabama Development Commission staff representative to answer questions regarding the requirements of Section 44 CFR 201.6(b)(1) and to explain the proposed local hazard mitigation plan. The local officials on each governing body were provided with a copy of the draft plan at the time it was initially presented. Following the meeting at which the draft plan was presented each official was asked to individually review the written plan and provide comments regarding additional mitigation measures or suggest other changes. The proposed mitigation measure to complete the warning siren system was obtained as a result of the local government meetings.

Local officials, staff members and other interested parties in attending local government meetings were also asked to individually rank the potential that each type of natural hazard would impact their jurisdiction or surrounding area. A form that summarized the findings of the risk assessment was distributed and the participants scored each hazard event. A score of 1 meant that type of natural hazard was most likely to occur. Each event was sequentially numbered so a score of 9 meant that natural hazard event was least likely to occur. This ranking procedure and how it was incorporated in the planning process is fully described in the section of this plan titled "Risk and Vulnerability Assessment" under the side heading "Description of Preliminary Ranking Process."

At the same meeting officials and other participants were asked to identify critical facilities in their jurisdiction and Pike County. This information was collected by distributing a form titled "Critical Facility Identification" so each person could individually identify facilities they felt were important to the community and county. These forms were collected and separately compiled by the staff of SCADC.

The ranking of hazards and collection of critical facility data were considered to be of importance in the process. The meetings at which this work was accomplished were considered important in the overall planning process. These meetings were conducted as follows: Pike County Commission, July 7, 2004; Town of Banks City Council, August 2, 2004; City of Troy City Council, August 23, 2004; City of Brundidge City Council, September 7, 2004 and Town of Goshen City Council, September 13, 2004. Minutes of the respective meetings, except for the City of Troy, document each of the meetings and are on file at the respective local governments. The meeting with the Pike County Commission was written up in the local newspaper and provided the citizens with information about the process. The City of Troy requested that the SCADC representative attend a work session of the City Council. No minutes were taken, but the meeting was attended by the press. Participation in the process is documented by the forms completed by local officials which are on file with the working papers supporting preparation of the plan.

Upon receiving acceptance o an amended plan from the Pike County Local Emergency Planning Council on June 9, 2005 a copy of the final plan proposed for adoption was mailed to each local official and selected administrative officials such as city and county managers, clerks and engineers. Times were then requested on the agenda of a regularly scheduled meetings of the governing body. A staff representative attended the local meeting to answer any questions that local officials might have prior to adopting the plan. Each of the local units of government in Pike County, Alabama have adopted the *"Multi Jurisdiction Hazard Mitigation Plan, Pike*

County and the Municipalities of Banks, Brundidge, Goshen and Troy". Copies of the respective resolutions of adoption are included at the front of the final document.

(3) Other Entities

In accordance with Section 44 CFR 201.6(b)(2) the local hazard mitigation plan must provide and document that neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, businesses, academia and other private and non-profit interests were invited and encouraged to actively participate in the planning process. These types of agencies were invited to participate in the planning process as discussed in the following paragraphs.

(a) Neighboring Communities and Local and Regional Hazard Mitigation Agencies

In compliance with Section 44 CFR 201.6(b)(2) the local hazard mitigation plan was distributed to adjoining counties and regional and local agencies involved in hazard mitigation activities for review and comment. Typical agencies include the Emergency Management Agency located in Barber, Bullock, Crenshaw, Coffee, Dale, and Montgomery County. Copies were also sent to selected members of the South Alabama Mutual Aid Group that work with Pike County as co-members of the group. To date no comments have been received. If comments are received they will be placed on file in the office of the Pike County Emergency Management Agency and addressed through the plan maintenance process.

(b) Agencies Responsible for Regulation of Development

The local agencies responsible for regulating development are all departments or agencies of the local municipalities and county. Copies of the local hazard mitigation plan were sent to the County Engineer, city clerks and the Troy Planning Department. To date no comments have been received. Any comments that are received will be placed on file in the office of the Pike County Emergency Management Agency and addressed as a part of the plan maintenance process.

(c) Businesses, Academia and Other Private and Non-profits

Local business, industry and academia interests already participate on the Pike County Local Emergency Planning Council and have been afforded the opportunity to review and comment on the plan through participation on the Council.

Public Involvement

In accordance with Section 44 CFR 201.6(b)(1) the local hazard mitigation plan must provide and document that the public was given an opportunity to comment on the plan. At a minimum the community must conduct one public meeting during the drafting stage and one public meeting after the completion of the draft and prior to the plan's approval to solicit formal comments on the plan. In addition the Plan must document the community's efforts to solicit comments from those residents who did not attend the public meetings.

(1) Public Meeting - Draft Stage

Following receipt of input to the plan by technical agencies and local governments a notice was run in the Troy, Alabama newspaper. The notice informed residents about the public meeting to be conducted on September 9, 2004 regarding the draft plan. A copy of the public

notice and the attendance sheet is on file at the office of the Pike County Emergency Management Agency.

The meeting was attended by one person. However that individual was the local director of the American Red Cross; a local organization that works closely with the Emergency Management Agency on many projects. After reviewing the contents of the plan additional information was provided regarding one dam failure on an impoundment north of Troy. The data provided was added to the risk assessment.

Similar to the sessions conducted at local government meetings the participant was asked to rank the likelihood that each type of natural hazard event would impact Pike County and to provide information regarding critical facilities and services. The input received at the initial public meting was incorporated in the appropriate sections of the local hazard mitigation plan.

(2) Public Meeting - Completion Stage

The second public meeting was conducted following incorporation of review comments received from the federal and state emergency management agencies. A notice of the second public meeting was published in the Troy, Alabama newspaper and announced on on the local radio station to notify residents that copies of the final plan were available for review at the offices of local governments and to notify them of the public meeting regarding the final plan. A copy of the meeting notice is on file at the offices of the Pike County Emergency Management Agency.

The second public meeting was conducted on May 26, 2005. No citizens attended the public meeting on the final plan.

(3) Process to Solicit Additional Comments

Copies of the final plan have been made available for review and comment by distributing copies to local governments, libraries and other local agencies such as the Red Cross office. A public notice was published in the Troy, Alabama newspaper to inform citizens that either written or verbal comments could be directed to the Pike County Emergency Management Agency. In addition the plan was posted on the Pike County web site. Citizens can address E-mail comments to the Pike County Emergency Management Agency. To date no comments have been received. Any future comments that are received will be addresses through the plan maintenance process.

Review of Other Plans

In accordance with Section 44 CFR 201.6(b)(3) the local hazard mitigation plan must include documentation that appropriate existing plans, studies, reports, and technical information were reviewed and incorporated into the local hazard mitigation plan. This documentation must include FEMA and CRS plans, if applicable.

In compliance with Section 44 CFR 201.6(b)(3) several local plans and studies were reviewed. The bibliography at the end of this section itemizes the local plans. The bibliography includes numerous document titles that were considered obsolete due to age or that did not relate to natural hazards. The obsolete or not applicable report titles are listed in regular type face.

Report titles that mentioned a natural hazard are listed in the bibliography using bold type face. A short narrative follows the title to explain the content of the plan and assesses the linkage to natural hazard planning. Generally there was only minimal and obscure information mentioned that was not judged to be highly relevant to supporting the current local hazard mitigation planning effort. The reasons for the assessment are apparent in the summaries included.

The plan review also included a review of Tier Two notifications and plans on file in the office of the Pike County Emergency Management Agency. These documents are not listed in this document.

Plan Adoption

Section 44 CFR 201.6(c)(5) requires that multi-jurisdictional local hazard mitigation plans include executed resolutions from each governing body formally adopting the plan. The resolutions of each respective governing body in Pike County adopting the local hazard mitigation plan, as required in Section 44 CFR 201.6(c)(5), are included in the front of this document.

BIBLIOGRAPHY OF REVIEWED PLANS AND LINKAGES
Pike County, Alabama

Pike County, Alabama

South Central Alabama Development Commission, *Land Use and Transportation Plan*, 1975

The document contains a land use and transportation plan to guide the future development of Pike County. The land use portion addresses the following topics: population, existing land use (for Pike County, Banks, Brundidge, Goshen and Troy)
Pike County flood plains, physiographic limitations, soil limitations for various urban uses, water, sewer, airport, open space and recreation, and land use plan. The transportation portion identified the existing road network, traffic volumes major streets, street conditions, rural road standards, sidewalks and a proposed major street plan.

The areas of Pike County and the four cities that were subject to flooding were generally mapped. The discussion of limitations does not address flooding conditions or recommend avoiding development in these areas. The proposed land use plan maps the flood plain areas as open space. However, the narrative does not discuss the flood areas or recommend avoiding development of these areas. In summary, the avoidance of flood plain development is hardly even implicit.

Pike County Soil and Water Conservation District, *An Appraisal of Potential for Outdoor Recreational Development, Pike County, Alabama*, 1968

Botts and Ray, Inc., *Pike County Comprehensive Areawide Water and Sewer Survey*, 1971

South Central Alabama Development Commission, Solid Waste Disposal Survey for Pike County, 1971

South Central Alabama Development Commission, Areawide Water and Sewer Plan, June, 1979

South Central Alabama Development Commission, *Rural County Highway Development Plan,* May, 1992

The purpose of this plan was to analyze the transportation needs of rural areas and develop priorities to meet the identified needs. The study focused on the roads that were under the jurisdiction of the Pike County Commission. The report compiled a road and bridge inventory for rural Pike County. The road inventory determined if the road was on the "Federal Aid to Secondary" system, the right of way width, whether the road was paved, the width of the pavement or travel surface, the condition of the road and the traffic volume (if available). The bridge inventory identified the year the bridge was built, structure length, sufficiency rating and the date of the rating, the average annual daily traffic, the road the bridge was located on by indicating the county road number and whether or not the road was on the federal aid to secondary system.

Follow-up contact was made with the Alabama Department of Transportation (ALDOT) to secure the updated bridge inventory for Pike County. This inventory contains additional information, such as the estimated cost of bridge replacement, that was not published in the planning report. This information is on file at the South Central Alabama Development Commission. However, ALDOT updates the inventory on a regular basis and the Pike County Engineer and SCADC both consider that to be the best source for current information.

Troy, Alabama

Alabama State Planning and Industrial Development Board, *Subdivision Regulations*, 1958

Alabama State Planning and Industrial Development Board, *Long Range Land Use Plan*, 1959

Alabama State Planning and Industrial Development Board, *Zoning Ordinance*, 1959

Alabama State Planning and Industrial Development Board, *Major Street Plan*, Circa 1960 to 1962

Alabama State Planning and Industrial Development Board, *Community Facilities Plan*, Circa 1960 to 1962

Alabama State Planning and Industrial Development Board, *Public Utilities Plan*, Circa 1960 to 1962

Alabama State Planning and Industrial Development Board, *Public Improvements Program*, Circa 1960 to 1962

Southeastern Planning Company, *Comprehensive Plan*, 1968

Southeastern Planning Company, *Neighborhood Analysis*, 1968

Southeastern Planning Company, *Zoning Ordinance* (revisions and update), 1968

Southeastern Planning Company, *Subdivision Regulations* (revisions and update) 1968

Wainwright Engineering Company, *Airport Master Plan*, 1973

Robert S. Bateman and Associates, Troy Recreation Study, Phase I, 1975

Robert S. Bateman and Associates, Troy Recreation Study, Phase II, 1976

Raymond Wheat and Associates, *Troy, Alabama Comprehensive Plan*, 1992

This plan was prepared to provide guidance for growth policy decisions for the City of Troy, Alabama. The document includes background information (soils, drainage and climate), existing land use survey and analysis, population and economy, community facility inventory

(recreation, schools, health and public buildings), land development and thoroughfare plan, and an annexation study.

Neither the drainage material in the background information nor the open space discussion in the community facilities sections mentions flood plains. The land development plan maps flood plains and serve slope areas using the same color pattern without distinction. Graphically the reader can not distinguish between the two areas. The text accompanying the land development plan focuses on the acreage required for urban uses such as residential, commercial and industrial. The plan does not address areas that should be left undeveloped, such as flood plains to eliminate conflicts with natural hazards.

The annexation portion of the study analyzes the tax revenues and facility expansion costs for various areas around the City of Troy. No information is included to address natural hazards.

Brundidge, Alabama

Alabama State Planning and Industrial Development Board, *Subdivision Regulations*, 1957

Alabama State Planning and Industrial Development Board, *Long Range Land Use Plan*, 1958

Alabama State Planning and Industrial Development Board, *Zoning Ordinance*, 1958

Alabama State Planning and Industrial Development Board, *Zoning Ordinance*, 1959

Alabama State Planning and Industrial Development Board, *Major Street Plan*, 1959

Alabama State Planning and Industrial Development Board, *Community Facilities Plan*, 1959

Alabama State Planning and Industrial Development Board, *Public Works Program*, 1959

South Central Alabama Development Commission, *Zoning Ordinance* (revised and updated), 1973

Community Development Consultants, Inc., *Recreation and Open Space Plan*, 1973

South Central Alabama Development Commission, *Community Facilities Plan*, 1975

South Central Alabama Development Commission, *Public Improvements Program*, 1975

South Central Alabama Development Commission, *Capital Improvements Budget*, 1975

Goodwyn, Mills and Cawood, Inc., Pike County Chamber of Commerce, *Engineering Report, Study of Potential Industrial Park Sites*, September, 1989

Alabama Electric Cooperative, Industrial Marketing, *Community Data for Pike County*, April 22, 1991

W. B. Speir and Associates, Pike County Chamber of Commerce, *Industrial Park Site Evaluation Study*, March, 1985

United States Department of Agriculture, Soil Conservation Service, Forest Service, *Choctawhatchee – Pea River Basin Cooperative Study, Reconnaissance Report*, January 1993

Emergency Plans

All Hazards Emergency Operations Plan, Pike County, Alabama, October 1987

This is the old version of the plan which was recently updated by the following title.

***Pike County Emergency Operations Plan*, Pike County, Alabama, February 2004**

This document has just been updated and describes various operating procedures for emergency situations. The material contained in the document is pertinent to the operations conducted during response and recovery from a disaster event.

Pike County Emergency Management Agency and the American Red Cross, *Are Your Ready? A Guide to Citizen Preparedness in Pike County*, (undated, but post 9/11/01)

This updated document is based on a federal publication with the same title. It provides preparedness information for citizens related to each type of natural hazard included in the local hazard mitigation plan. The document contains basic information that has been recommended to be printed as flyers for distribution to citizens. See Mitigation Strategy section later in this report.

Pike County Emergency Management Agency, *How Families and Individuals can Prepare*, (undated)

This undated document tells citizens how they can prepare for emergencies by identifying emergency numbers, maintaining a first aid kit, storing emergency supplies and supplies that should be kept in personal vehicles. In addition, the document provides similar information to the above document regarding preparation and prevention techniques for different types of natural hazards. Some of the information may be able to be combined with the data from the above document.

Risk and Vulnerability Assessment

Introduction

This chapter of the "Multi Jurisdiction Hazard Mitigation Plan": 1) highlights the federal requirements for the risk and vulnerability assessment; and 2) presents a profile of the risk and vulnerability to each type of natural hazard that can potentially impact Pike County. To comply with the requirements a draft profile risk assessment was prepared for each natural hazard. The profile was presented to officials and citizens in a series of meetings to: 1) obtain comments on each risk profile; 2) rank the probability of each type of hazard impacting Pike County; and 3) identify critical facilities. Once the range and extent of potential hazard impacts were identified the vulnerability to damage from each hazard was determined.

The federal regulations present the requirements for the risk assessment first and the vulnerability assessment second. The risk assessment indicated many natural hazards occur over large areas and were subject to impacting all of Pike County. To address the requirements and widespread hazard conditions the order of presentation in this section is: 1) Federal requirements; 2) Procedure and results of the local determination of the relative risk that each type of natural hazard represents in Pike County; 3) General data related to vulnerability; and 4) Profile of the risk / vulnerability assessment for each natural hazard.

Risk and Vulnerability Assessment Requirements

In order to comply with 44 CFR 201.6(c)(2)(i) the local mitigation plan must include a description of the type of natural hazards that can affect the local jurisdictions. At a minimum it is recommended that the local hazard mitigation plan address the following hazards:

Coastal and Riverine Erosion, Landslides and Sinkholes
Dam or Levee Failure
Drought / Heat Wave
Earthquake
Floods
Hurricane and Coastal Storms
Severe Thunderstorms / Tornadoes
*Tsunami (Tidal Wave) **
*Volcano **
Wildfires
Winter Storms / Freezes (Severe Snowfall or Freezing Ice Storms)

* See following discussion addressing location and geology

Due to the inland geographic location and existing natural (physiographic) conditions of Pike County, the volcanic and tidal wave hazards do not apply. The southern border of Pike County is located approximately 90 miles inland from the Gulf of Mexico (See Illustration 1). The physiography of the Pike County area of Alabama does not indicate a threat from volcanoes (See Illustration 2).

Illustration 1:

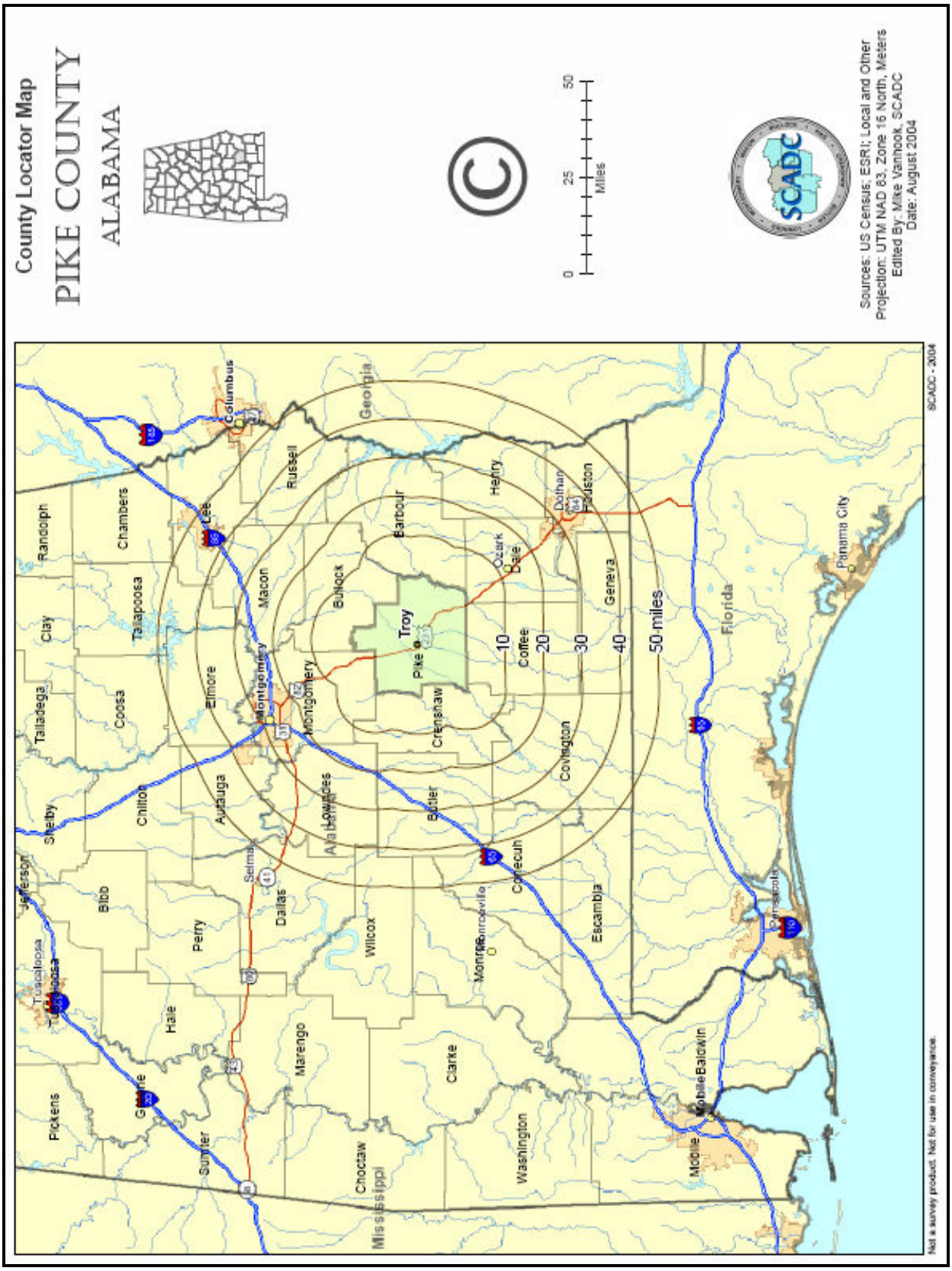
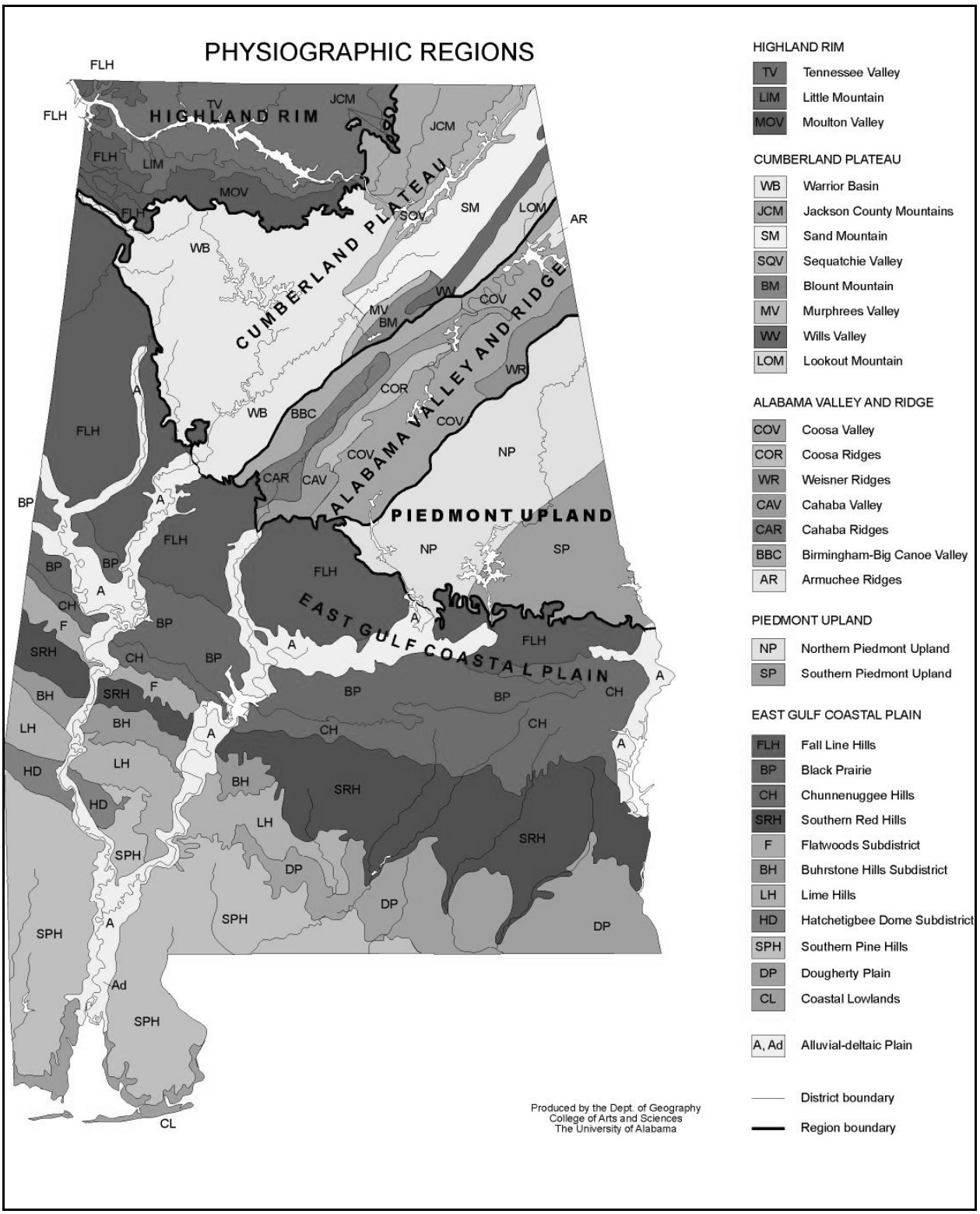


Illustration 2:



The remaining nine natural hazards must be profiled in accordance with the requirements of section 44 CFR 201.6(c)(2)(i). The purpose of profiling is to create a factual basis for assessing the risk of each type of natural hazard and include sufficient detail to identify and prioritize future activities that can be undertaken to prevent and reduce future losses.

In accordance with section 44 CFR 201.6(c)(2)(i) the local hazard mitigation plan must include a description of the location and extent of each identified hazard that can affect the jurisdiction. The plan must include information on previous occurrences of hazard events and on the probability of future events for each identified hazard. In order to comply with section 44 CFR 20 1.6(c)(2)(iii) a multi-jurisdictional plan must assess each jurisdictions risks where they vary from the risks facing the entire planning area for each identified hazard.

In accordance with section 44 CFR 201.6(c)(2)(ii) the local hazard mitigation plan must contain a description of the jurisdiction's vulnerability to each identified hazard. The description shall include an overall summary of each identified hazard and its impact on the community.

In accordance with section 44 CFR 201.6(c)(ii)(A) the local hazard mitigation plan should describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in each identified hazard area. A rationale for designating a facility as critical must also be included in this section. In the first update of the plan the vulnerability description should also include a discussion of future buildings infrastructure and critical facilities, and the potential human and economic impact that each identified hazard would have on the jurisdiction.

In accordance with section 44 CFR 201.6(c)(ii)(B) the local mitigation plan should describe vulnerability in terms of an estimate of the potential dollar losses and vulnerable structures for each identified hazard. This section should also include a description of the methodology used to prepare the estimate of losses.

In accordance with 44 CFR201.6(c)(2)(ii)(C) the local mitigation plan should provide a general description of land uses and development trends within the jurisdiction so that mitigation options can be considered in future land use decisions.

Description of Preliminary Ranking Process

Presentations were made at regular meetings of each local government regarding the risk assessments prepared for the nine natural hazards applicable to Pike County. Every local official, staff members and citizens in attendance were provided a summary sheet listing and summarizing the risk assessment for the natural hazards. (See next page – "Natural Hazard Mitigation Priority Assessment.) Each individual was invited to participate by expressing their opinion about the likelihood that each type of natural hazard would occur in their jurisdiction or nearby area. The hazard events were rated with the most likely to occur receiving a score of 1, the next most likely to occur a score of 2, and so on until the natural hazard event least likely to occur received a score of 9. The individual responses were submitted to the South Central Alabama Development Commission and the rank scores were summed to determine the combined rating for each local government jurisdiction. The same natural hazard rating process was also administered at the first public meeting.

NATURAL HAZARD MITIGATION
PRIORITY ASSESSMENT

Please rank the following natural hazards in order with the hazard most likely to have the greatest impact on your jurisdiction as number one (1). Rank the remaining hazards with consecutive numbers so nine (9) is the hazard with the least probable impact.

Category and Description	***Priority***
Erosion, Landslide and Subsidence *River and stream bank erosion will continue to occur, as in the past, because streams meander as a natural function of stream morphology. Neither landslides or subsidence has occurred, but geologic characteristics indicated they could occur in southern Pike County. No time frame is associated with these findings.*	
Dam and Levee Failure *No dam and levee failures are known to have occurred. No time frame is associated with these findings.*	
Drought / Heat Wave *The National Climatic Data Center (NCDC) data indicates there were no droughts from 1950 through 2003. Geologic Survey of Alabama (GSA) data indicates there were 13 droughts from 1884 to 1996.*	
Earthquake *U. S. Geological Survey and GSA data indicate no earthquakes were centered closer than 80 miles to Pike County from 1886 through 1998.*	
Flood *NCDC data indicates there have been three (3) county wide floods from 1950 to 2003.*	
Hurricane and Coastal Storm *NCDC data indicates one hurricane, in 1995, impacted Pike County from 1950 through 2003. Storm track data indicates that from 1851 through 2001 a total of 130 tropical depressions and storms tracked within 30 miles of Pike County and eight followed paths passing over Pike County. Forty-seven (47) of these events occurred from 1950 through 2001.*	
Severe Thunderstorm and Tornado *NCDC data indicates that 83 thunderstorms and 26 tornados occurred in Pike County from 1950 through 2003.*	
Wildlife *NCDC data indicates that no wildfires occurred in Pike County from 1950 through 2003. Alabama Forestry Commission data indicates that 177 wildfires occurred in Pike County from 1995 through 2003.*	
Winter Storm / Freeze *NCDC data indicates that two (2) snow and ice storms and three (3) cold weather events have occurred from 1950 through 2003.*	

Jurisdiction _____ Name _____

The combined rankings from each governmental unit and the public meeting were then added together. The natural hazard receiving the lowest score was attributed as the natural hazard that was judged most likely to occur in Pike County as determined by the collective opinion of all participants. The natural hazard with the highest score was collectively judged to be the least likely to occur. These rankings were provided to the Local Planning Council for review and comment as a part of the final plan.

Results of Collective Ranking

All areas unanimously concurred that the natural hazard event most likely to occur was "Severe Thunderstorms and Tornadoes". No other rankings were unanimous. There was consensus that "Coastal Storms and Hurricanes", "Drought / Heat Wave" and "Winter Storms and Freezes" were the types of natural hazard events that were likely to occur in Pike County. There was also a consensus that "Earthquakes" and "Dam or Levee Failures" were the natural hazard events least likely to occur. The remaining natural hazard events were variously ranked with a moderate to low expectation of occurrence. The composite ranking of natural hazard events, based on the collective scoring, resulted in the following listing.

Relative Probability of Natural Hazard Event Occurrence
Pike County, Alabama

Thunderstorms and Tornadoes	Most likely to occur
Hurricanes and Coastal Storms	↓
Drought / Heat Wave	
Winter Storm / Freezes	
Wildfires	
Flood	
Riverine Erosion, Landslides and Sinkholes	
Dam or Levee Failure	
Earthquake	Least likely to occur

Tabulation of Vulnerable Population and Housing

The majority of the natural hazard events that are likely to occur in Pike County and the four municipalities are subject to producing countywide impacts. This section presents an overview of the population and housing in Pike County. Data is presented for Pike County "County Census Divisions" (CCD) and cities as appropriate.

1. County Overview

Population data for Pike County is presented in the table "Historic Population".

Historic Population, 1930 to 2000
Pike County, Alabama

Year	*Population*
1930	32,240
1940	32,493
1950	30,608
1960	25,987
1970	25,038
1980	28,050
1990	27,595
2000	29,605

Source: U. S. Census Bureau

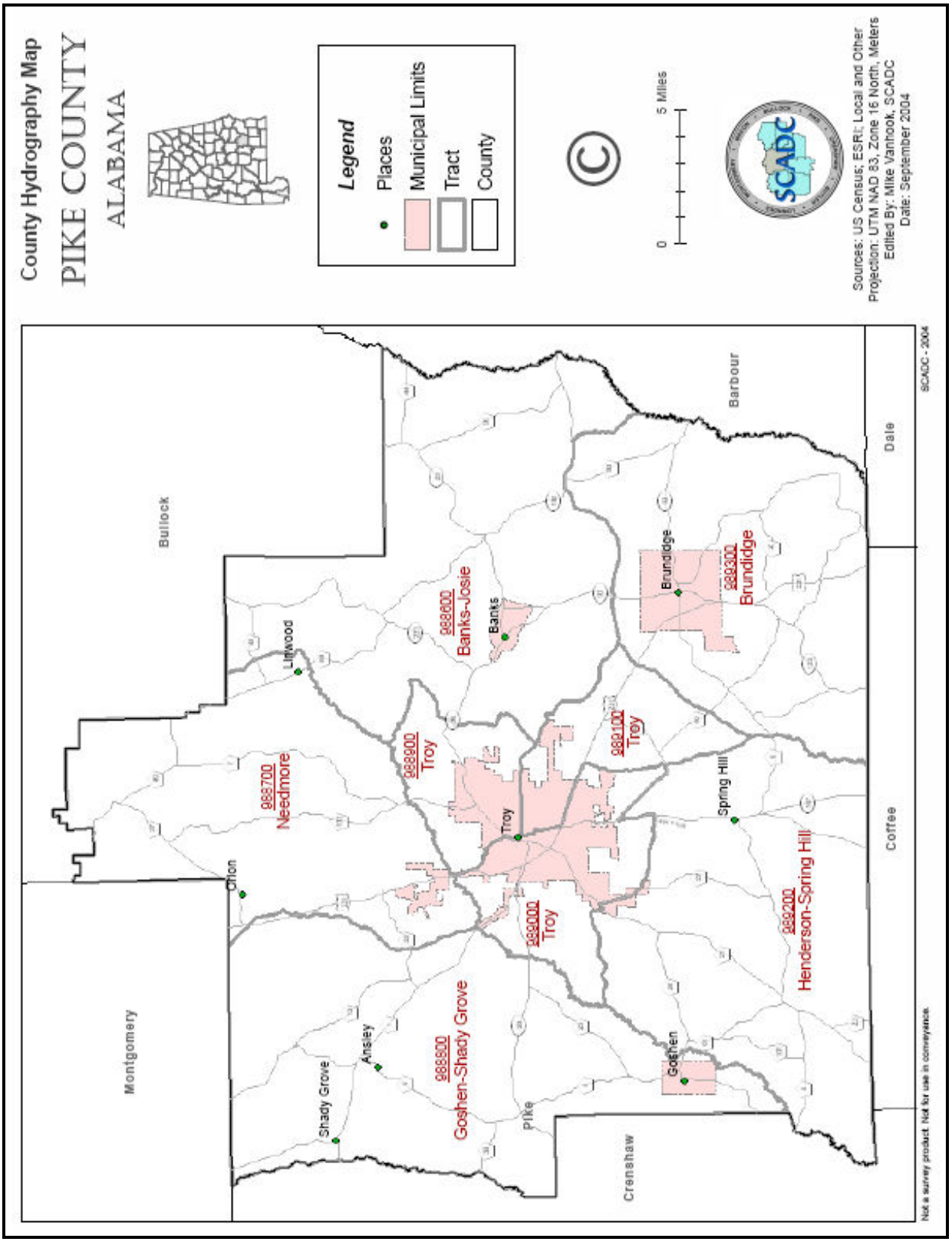
The population of Pike County reflects a typical historic pattern for moderate sized communities in America. Prior to World War II the population remained relatively concentrated in urban areas due to economic factors and limited transportation capacity. By 1950 the national migration trends from south to north, driven by the search for jobs, and out migration from cities to suburban locations began to reduce the population in rural areas and small communities. This trend continued through the 1970 census period. The effects of the oil embargo and gas fuel shortages are partially reflected in the 1980 Census as residents began to limit their commuting to work and local populations began to stabilize or increase. By the 1990 Census rural out migration was almost complete and local populations were more stabilized and ready to increase. Growth between 1990 to 2000 reflects the national trend of people out migrating from metropolitan areas, such as Montgomery, and moving to communities between with populations between 10,000 and 50,000. The presence of Troy University in Pike County supports this trend because a large number of the migrating residents were seeking opportunities for continuing education.

The fact that Pike County has followed historic national and regional trends is important. Population growth, in the short term future, should be anticipated in Pike County; especially in Troy and nearby suburban areas located north and south of Troy where recent growth has occurred. More moderate growth should be expected in Brundidge and southeast Pike County.

2. Pike County Census Divisions

The table "Population by County Census Division" presents recent population data for County Census Divisions and Pike County. The geographic areas covered by each census division and the municipal boundaries used for the 2000 Census are shown on Illustration 3.

Illustration 3:



Population by County Census Division, 1980 to 2000
Pike County, Alabama

					Change 1990 to 2000	
County Census Division	*2000*	*1990*	*1980*		*Number*	*Percent*
Banks Josie	2,165	1, 959	2,123		206	10.52
Brundidge	4,414	4,235	5,419		179	4.23
Goshen Shady Grove	2,279	2,120	2,242		159	7.50
Henderson Spring Hill	3,002	2,457	2,324		545	22.18
Needmore	1,771	1,405	1,186		366	26.05
Troy	15,974	15,419	14,756		555	3.60
Pike County	29,605	27,595	28,050		2,010	7.28

Source: U. S. Census Bureau

The County Census Division data shows that Pike County is primarily growing in the rural areas located north and south of the City of Troy. These areas are growing between three and four times faster than the overall county. The northeast portion of the county, Banks Josie CCD, is also growing at a rate that is approximately 50% faster than the overall county.

3. Population of Urban Areas in Pike County

The table "Population by Municipality" presents population data for the municipalities in Pike County. The "Balance of County" population was determined by subtracting the population of the municipalities from the population of the respective County Census Division and summing the subtotals. The table shows that only Troy gained a significant number of people. Based on the rural growth in the balance of county it was determined that the rural areas of Pike County outgrew the municipalities by a ratio of 1.64:1.

Population by Municipality, 1990 to 2000
Pike County, Alabama

				Change 1990 to 2000	
Municipality	*2000*	*1990*		*Number*	*Percent*
Banks	224	209		15	7.18
Brundidge	2,341	2,435		-94	-3.86
Goshen	300	309		-9	-2.91
Troy	13,379	12,707		672	5.29
Urban Population	16,800	16,041		759	4.73
Balance of County	12,805	11,554		1,251	10.83

Source: U. S. Census Bureau

4. Population by Broad Age Groups

The table "Population by Broad Age Groups" (next page) presents broad age group population data for the County Census Division and municipalities in Pike County. The data shows that school age children are concentrated in the municipalities of Pike County similar to the population. Despite this concentration, proportionately the families in the "Balance of County", or areas outside the municipalities, have more school age children per household. Residents in the labor force age group tend to live in the municipalities in Pike County. The largest concentration of people in this category reside in the City of Troy. Elderly, or over 65 years of age, tend to be uniformly distributed between the urban and rural areas of Pike County in a manner similar to the total population.

5. Population per Housing Unit in Pike County

During the period from 1990 to 2000 the average population per occupied household decreased as shown in the table "Population Per Occupied Household". The data in the table indicates that the number of occupied houses grew at a percentage rate approximately double the population growth.

Population Per Occupied Household, 1990 and 2000
Pike County, Alabama

				Change 1990 to 2000	
	2000	*1990*		*Number*	*Percent*
Population	29,605	27,595		2,010	7.28
Occupied Housing	11,993	10,314		1,619	15.70
Population per House	2.48	2.68			

Source: U. S. Census Bureau

6. Housing Units in Pike County by Sub Area and Type

The table "Occupied and Vacant Housing" shows that the total number of housing units and occupied housing units are distributed similar to the total population. The census data indicates what appears to be a high housing vacancy rate. A structural condition survey should be conducted to determine what percentage of the vacant units are suitable for habitation.

7. Mobile Homes as a Percentage of Housing

The table "Occupied Housing Units and Mobile Homes" reports the total number of housing units, number of occupied housing units and the number of occupied mobile homes in Pike County by County Census Division. The number of mobile homes for the year 2000 was calculated by dividing the reported population residing in mobile homes by the population per housing unit for the respective County Census Division. Census data to be released in the future will provide an actual count of mobile homes located in both the County Census Divisions and the municipalities. This information can be updated when the Census Bureau data is released.

Population by Broad Age Group
County Census Divisions and Municipalities
Pike County, Alabama

Area	*Total*	*Under 5*		*5 to 17*		*18 to 64*		*Over 65*	
		Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Pike County	29,605	1,923	6.50%	5,288	17.86%	18,667	63.05%	3,727	12.59%
Banks - Josie CCD	2,165	126	5.82%	437	20.18%	1,294	59.77%	308	14.23%
Banks (town)	224	10	4.46%	47	20.98%	130	58.04%	37	16.52%
Brundidge CCD	4,414	247	5.60%	789	17.87%	2,583	58.52%	795	18.01%
Brundidge (city)	2,341	127	5.43%	404	17.26%	1,353	57.80%	457	19.52%
Goshen Shady Grove CCD	2,279	139	6.10%	408	17.90%	1,360	59.68%	372	16.32%
Goshen (town)	300	15	5.00%	55	18.33%	164	54.67%	66	22.00%
Henderson Spring Hill CCD	3,002	225	7.50%	628	20.92%	1,792	59.69%	357	11.89%
Troy (part)	171	5	2.92%	26	15.20%	106	61.99%	34	19.88%
Needmore CCD	1,771	134	7.57%	339	19.14%	1,112	62.79%	186	10.50%
Troy (part)	385	35	9.09%	86	22.34%	251	65.19%	13	3.38%
Troy CCD	15,974	1,052	6.59%	2,687	16.82%	10,526	65.89%	1,709	10.70%
Troy (city)	13,379	866	6.47%	2,135	15.96%	8,880	66.37%	1,498	11.20%
Urban Area Totals	16,800	1,058	6.30%	2,753	16.39%	10,884	64.79%	2,105	12.53%
	56.75%	55.02%		52.06%		58.31%		56.48%	
Balance of County	12,805	865	6.76%	2,535	19.80%	7,783	60.78%	1,622	12.67%
	43.25%	44.98%		47.94%		41.69%		43.52%	

Occupied and Vacant Housing, 2000
Pike County, Alabama

Area	*Total* *Number*	*Percent* *of Total*	*Occupied* *Number*	*Percent* *of Total*	*Percent* *Occupied*	*Vacant* *Number*	*Percent* *Vacant*
Pike County	13981		11933		85.35%	2048	14.65%
Banks - Josie CCD	1031	7.37%	853	7.15%	82.74%	178	17.26%
Banks (town)	102	0.73%	92	0.77%	90.20%	10	9.80%
Brundidge CCD	2195	15.70%	1894	15.87%	86.29%	301	13.71%
Brundidge (city)	1192	8.53%	1014	8.50%	85.07%	178	14.93%
Goshen Shady Grove CCD	1090	7.80%	941	7.89%	86.33%	149	13.67%
Goshen (town)	146	1.04%	138	1.16%	94.52%	8	5.48%
Henderson Spring Hill CCD	1340	9.58%	1191	9.98%	88.88%	149	11.12%
Goshen							
Troy (part)	75	0.54%	75	0.63%	100.00%	0	0.00%
Needmore CCD	858	6.14%	708	5.93%	82.52%	150	17.48%
Troy (part)	166	1.19%	147	1.23%	88.55%	19	11.45%
Troy CCD	7467	53.41%	6346	53.18%	84.99%	1121	15.01%
Troy (city)	6195	44.31%	5361	44.93%	86.54%	834	13.46%
Units in Municipalities	7876	56.33%	6827	57.21%	86.68%	1049	13.32%
Units in Balance of County	6105	43.67%	5106	42.79%	83.64%	999	16.36%

Occupied Housing Units
and Change in Mobile Home Occupancy
Pike County, Alabama

	2000 Housing Units			*1990 Housing Units*			*1990 to 2000 change*					
	Total	*Occupied*	*Mobile*	*Total*	*Occupied*	*Mobile*	*Total Housing*		*Occupied Units*		*Mobile Homes*	
Area	*Housing*	*Units*	*Homes*	*Housing*	*Units*	*Homes*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Pike County	13,981	11,933	3,330	11,506	10,314	2,586	2,475	21.51%	1,619	15.70%	744	28.77%
Banks - Josie CCD	1,031	853	340	921	760	289	110	11.94%	93	12.24%	51	17.65%
Brundidge CCD	2,195	1,894	599	1,803	1,645	398	392	21.74%	249	15.14%	201	50.50%
Goshen Shady Grove CCD	1,090	941	342	996	889	259	94	9.44%	52	5.85%	83	32.05%
Henderson Spring Hill CCD	1,340	1,191	450	1,077	946	380	263	24.42%	245	25.90%	70	18.42%
Troy (part)	75	75										
Needmore CCD	858	708	417	625	526	254	233	37.28%	182	34.60%	163	64.17%
Troy CCD	7,467	6,346	1,182	6,084	5,548	1,006	1,383	22.73%	798	14.38%	176	17.50%

Due to a combination of population increase and the decrease in household size the total number of housing units increased 21.51% and the number of occupied housing units increased by 15.7% from 1990 to 2000. During the same period the total number of occupied mobile homes increased 28.77%. The increase in the number of occupied mobile homes represented 45.95% of the total increase in occupied housing in Pike County for the decade 1990 to 2000. The largest increases in occupied mobile homes occurred in the Needmore CCD (64.17%), Brundidge CCD (50.5%), and Goshen Shady Grove CCD (32.05%).

The table "Occupied Mobile Homes as a Percent of Occupied Housing" presents information on the: a) percent of housing stock represented by mobile homes; and b) percent change in occupied mobile homes compared to total occupied housing. The data shows that occupied mobile homes in Pike County represent a higher percentage of the housing stock in 2000 than in 1990; except in the Troy CCD which is dominated by the City of Troy. In the Needmore CCD, north of Troy, occupied mobile homes represent 58.9% of the total occupied housing.

The comparison of the 1990 to 2000 changes in occupied housing and occupied mobile homes is also pertinent. The census data indicates that occupied mobile homes replaced other forms of occupied housing in the Goshen Shady Grove CCD. The total number of occupied housing units increased by 52 while the number of occupied mobile homes increased by 83, or 159.62% of the increase in occupied housing. Other County Census Divisions with high percentages of increase in occupied mobile homes compared to occupied housing include Needmore CCD (89.56%), Brundidge CCD (80.72%), and Banks Josie CCD (54.84%). These areas therefore have increased vulnerability to the strong winds associated with severe thunderstorms, tornadoes and storms associated with hurricanes; all of which have been locally identified as the natural hazard events most likely to impact Pike County.

Occupied Mobile Homes as a Percent of Occupied Housing
And Change in Occupied Housing, 1990 to 2000
Pike County, Alabama

	2000 Housing			*Increase 1990 to 2000*		
	Occupied	*Occupied Mobile*	*Percent Mobile*	*Occupied*	*Occupied Mobile*	*Percent Mobile*
Area	*Units*	*Homes*	*Homes*	*Units*	*Homes*	*Homes*
Pike County	11,933	3,330	27.91%	1,619	744	45.95%
Banks - Josie CCD	853	340	39.86%	93	51	54.84%
Brundidge CCD	1,894	599	31.63%	249	201	80.72%
Goshen Shady Grove CCD	941	342	36.34%	52	83	159.62%
Henderson Spring Hill CCD	1,191	450	37.78%	245	70	28.57%
Needmore CCD	708	417	58.90%	182	163	89.56%
Troy CCD	6,346	1,182	18.63%	798	176	22.06%

Order and Format of Assessments

1. Order of Presentation

The profiles of the risk and vulnerability assessments for natural hazards are presented in the same order they were collectively ranked for probability of occurrence.

Thunderstorms and Tornadoes
Hurricanes and Coastal Storms
Drought / Heat Wave
Winter Storm / Freezes
Wildfires
Flood
Riverine Erosion, Landslides and Sinkholes
Dam or Levee Failure
Earthquake

2. Format of Individual Assessment

The risk assessment addresses each type of natural hazard that could impact Pike County. The vulnerability assessment determines the potential number of people and structures that could be impacted by each type of natural hazard. The profile of the risk and vulnerability assessment for each natural hazard is presented using the following format.

1. Summary of the Identified Hazard
2. Description of Risk
    (i) Prior Occurrences
    (ii) Future Probability
    (iii) Location and Extent
3. Community Vulnerability to Impact
    (i) Land Use and Development Trends
    (ii) Buildings, Infrastructure and Cultural Facilities
    (iii) Estimate of Dollar Loss

The discussion of critical facilities is included in an addendum to the "*Multi Jurisdiction Hazard Mitigation Plan, Pike County, Alabama and the Municipalities of Banks, Brundidge, Goshen and Troy*".

The risk assessment indicated that most hazard conditions occur over large areas and are subject to impacting the entire county. The exceptions to natural hazards impacting wide geographic areas are flooding and dam or levee failures. The following paragraphs specifically identify the geographic areas that could be impacted by each type of natural hazard event. The assessment of the number of people and residential buildings that could be impacted was presented in the first part of this section as a countywide summary. The vulnerability related to each natural hazard is included as a part of each of the following respective risk / vulnerability assessments.

Hazard: Severe Thunderstorms / Tornadoes

1. Summary of Identified Hazard

Thunderstorms are small in size when compared to hurricanes and winter storms, but are still large enough to impact a wide area. Several elements, presenting different dangers, are associated with thunderstorms. All thunderstorms produce lightening. Although most thunderstorms produce rain, some storms can be dry storms. Storms producing moisture can result in large quantities of rain or hail. Dry thunderstorms are more prevalent in the western United States, but can form when there is a large layer of dry air between the ground and the base of the cloud. The falling raindrops may evaporate in the dry air, but the lightening associated with a dry thunderstorm can still reach the ground. Dry thunderstorms can ignite wildfires. In addition, a thunderstorm produces strong winds including vertical shear and tornadoes.

The element that defines a thunderstorm is lightening. Lightening is caused by the build-up and discharge of electrical energy between positively and negatively charged areas. The unpredictability of lightening increases the risk to individuals and property.

Tornadoes are spawned from powerful thunderstorms. A tornado appears as a rotating funnel cloud that extends to the ground. The winds of a tornado can reach 300 miles per hour. Damage paths can range from limited width and length to in excess of one mile wide and 50 miles long.

Thunderstorms producing large quantities of rain may result in flash flooding. Hail associated with thunderstorms can range from small and relatively harmless ice pellets to large hail stones that cause damage to roofs and skylights, crops and landscape plants, automobiles and other features located in the storm area. Strong winds produce varying degrees of damage and range up to the intense wind forces associated with tornadoes that can virtually destroy everything in the path of the storm. Since lightening is associated with thunderstorms the threat of injury or death for individuals and significant damage to structures and property, including the potential for fire, is present.

2. Description of Risk

(i) Prior Occurrences

According to National Climatic Data Center (NCDC) data Pike County experienced 83 thunderstorms and 26 tornadoes (109 storms) during the 54 year period from January 1, 1950 through December 31, 2003. Of the 83 thunderstorms, 56 (67.5%) were accompanied by high winds and 27 (32.5%) produced hail.

(ii) Future Probability

Having experienced a total of 109 storms over the 54 years of record there is a probability that two severe storms per year may be experienced. There is about a 75% probability storms will be severe thunderstorms and about 25% probability of a tornado.

(iii) Location and Extent

A location analysis could not be conducted using the historic data because the beginning location (latitude and longitude) on several of the storms is given as the same location - the Troy, Alabama airport. Data for many of the storms indicated that the end location was unknown. Therefore, it must be assumed that Pike County and all municipalities are considered to be vulnerable to severe thunderstorms and tornadoes.

The narrative description for the location of historic storms producing hail identifies 13 (48.1%) as being unknown, four in Brundidge, two in Troy, two in Goshen and six in unincorporated (outside municipalities but not specified) locations in Pike County. Of the 56 thunderstorms with high winds, only 11 (5.1%) have narrative location descriptions. Of the eleven storms with narrative locations, six were cited as being in the City of Troy, two in Brundidge and three in unspecified, unincorporated areas of Pike County. The remaining storms were only located by longitude and latitude and many of these storms are also cited as being at the Troy airport.

Similarly, the locations of the reported tornadoes are frequently cited as beginning in southeast Pike County and the end location is given as "unknown". Of the eight tornado events with narrative locations cited, six were in unspecified, unincorporated areas of Pike County and one tornado each was reported in Goshen and Troy. The width of tornado paths was cited as ranging from 25 to 300 yards. The length of tornado paths was cited as ranging from spot touchdowns up to 24 miles in length. The physical dimensions of Pike County averages approximately 20 by 27 miles. As such, the length of the longest historic tornado touchdown is almost sufficient in length to cross the entire county.

The Pike County Emergency Management Office has noticed that many of the storms that impact the local area originate south-southwest of Pike County. Particular attention is paid to weather systems capable of producing severe storms when they track near Monroe and Conecuh County.

3. Community Vulnerability to Impact

(i) Land Use and Development Trends

It is not practical to attempt to adjust overall development to avoid storm patterns since the locations of past severe thunderstorms and tornadoes are not accurately reported. Future building construction practices can include features such as those addressed in the section titled "Mitigation Strategy for Thunderstorms / Tornadoes. Future land use trends can avoid development in areas subject to flooding from intense rain associated with severe thunderstorms and tornadoes. This aspect of mitigation is addressed in the flood hazard section of this document.

(ii) Buildings, Infrastructure and Cultural Facilities

All buildings, above ground infrastructure and cultural facilities are subject to damage from thunderstorms and tornadoes. During thunderstorms there may be flooding closing roads or cultural facilities and result in damage or inconvenience. (See flood hazard.) When storms are accompanied by hail there can be damage to roofs, broken windows and skylights, and merchandise at outside display lots may be dimpled or heavily damaged. In addition, hail can

cause extensive crop damage. Storms with high winds can topple structures such as outdoor advertising, damage buildings, break trees and limbs resulting in utility interruptions or blocked transportation arterials, and tip cars, trucks and other vehicles or bulk merchandise (e.g. storage buildings) exposed to the wind. Experience has shown that manufactured housing (mobile homes) are especially susceptible to damage during high winds and tornadoes. Finally, tornadoes can create a path of total destruction along the path of the touchdown. In essence every elevated building, structure and facility is subject to being damaged or destroyed by storms and tornadoes. The Pike County Emergency Management Office reported that the December, 2000 storm caused structural damaged to two permanent residences and severely damaged several manufactured homes.

The table "Population and Housing Vulnerable to Severe Thunderstorms and Tornadoes", on the next page, presents the 2000 population and count of residential structures for Pike County, Census Divisions and municipalities as an estimate of personal and structural vulnerability. Mobile homes are reported separately since they are subject to damage caused by high winds.

(iii) Estimate of Dollar Loss

Based on historic events the following losses have occurred. "Historic loss" includes all financial losses reported in the NCDC data. "Max loss" indicates the largest loss reported for a single storm event. "Average loss" equals the total dollar losses divided by the number of events to determine the average amount lost per hazard event. The amount of loss is reported in dollars for the year in which the loss occurred and has not been adjusted for inflation. The amount of loss in current dollars would therefore be higher.

Losses Resulting from Severe Thunderstorms and Tornadoes

Event	***Loss Measure***	***Deaths***	***Injuries***	***Property Loss***	***Crop Loss***
Hail /a	Historic Loss	0	0	$109,000	$15,000
	Max. Loss			60,000	10,000
	Average Loss			12,110	7,500
Thunderstorms	Historic Loss	0	6	$145,000	$12,000
	Max. Loss			40,000	5,000
	Average Loss			24,170	4,000
Tornado /b	Historic Loss	0	6	$4,113,000	$10,000
	Max. Loss			250,000	5,000
	Average Loss			187,000	3,350

Notes: a/ Hail stones reported varied in size from 0.75" to 2.75"
a/ Tornado and Lightening damage reports were identical and should not be double counted

Source: National Climatic Data Center

Population and Housing
Vulnerable to Severe Thunderstorms and Tornadoes
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Total Housing***	***Mobile Homes /a***
Banks Josie CCD	*2,165*	*853*	*340*
Banks	224	92	
Balance of CCD	1,941	761	
Brundidge CCD	*4,414*	*1,894*	*599*
City of Brundidge	2,341	1,014	
Balance of CCD	2,073	880	
Goshen Shady Grove CCD	*2,279*	*941*	*342*
Town of Goshen	300	138	
Balance of CCD	1,979	803	
Henderson Spring Hill CCD	*3,002*	*1,191*	*450*
City of Troy (part)	171	75	
Balance of CCD	2,831	1,116	
Needmore CCD	*1,771*	*708*	*417*
City of Troy (part)	385	147	
Balance of CCD	1,386	561	
Troy CCD	*15,974*	*6,346*	*1,182*
City of Troy (part)	13,379	5,361	
Balance of CCD	2,595	985	
City of Troy total	13,935	5,583	
Pike County	*29,605*	*11,933*	*3,330*

Note: a/ Based on calculations of available Census data. To be updated when additional Census data is released.

Source: U. S. Census Bureau

Hazard: Hurricane and Coastal Storms

1. Summary of Identified Hazard

Hurricane is a generic term for a low pressure weather system that usually forms in the tropics. A hurricane is fueled by a pre-existing weather disturbance, warm water bodies (e.g. topical ocean areas), moisture and relatively light winds aloft. A hurricane has wind speeds in excess of 74 miles per hour and well defined circulation at the surface. A hurricane typically creates a storm surge of water along coastal areas that exceeds high tide levels. A storm surge is a dome of water that is pushed on-shore by the winds associated with the hurricane. Hurricanes, while a severe storm in its own right, frequently spawn strong thunderstorms and tornadoes.

Hurricanes are most frequently associated with the coastal area of Alabama and the panhandle of Florida, However, hurricane Opal, October 4, 1995, maintained hurricane winds well inland in Alabama. High wind gusts associated with Opal were reported at 68 miles per hour in Montgomery and 44 miles per hour in Columbus, Georgia. Pike County is located in between these reporting locations and also experienced high winds and rain. According to the Pike County Emergency Management Office the winds in Pike County may have reached 80 to 90 mile per hour gusts.

More recently, on September 16, 2004, Hurricane Ivan also maintained hurricane strength as far inland as Pike County. No lives were lost, but damage occurred and extensive debris clean-up was necessary. The total dollar value of damage caused by Ivan was not available to include in this report.

Since the NCDC data was collected Pike county has been impacted by hurricane Ivan which struck Alabama in September 16, 2004. No lives were lost, but property damage occurred and significant expenditures were made by local governments (city and municipalities) to clean up the storm debris. When all settlements are complete the cost of damage caused by hurricane Ivan will have to be added.

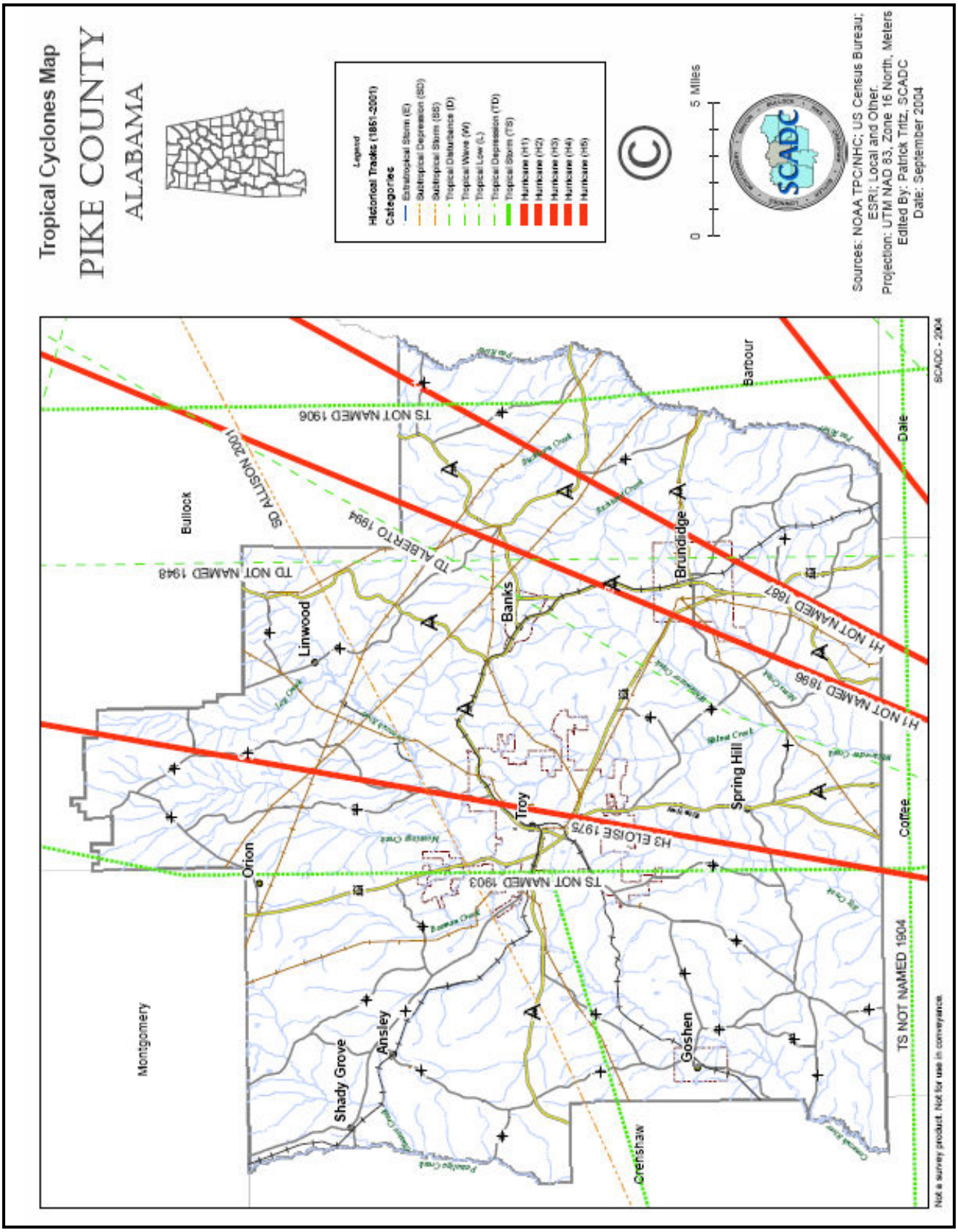
The National Climatic Data Center (NCDC) information only lists Opal as impacting Pike County. Data for tropical depressions, storms and hurricanes indicate that 130 storms have tracked within 30 miles of Pike County from August, 1851 through August, 2001. A total of 47 of these storms occurred during the January 1, 1950 to December 31, 2003 period covered by the NCDC data. Of the 130 total storms, eight tracked over Pike County. (See illustration 4)

2. Description of Risk

(i) Prior Occurrences

According to the 54 year period covered by the NCDC records there has been one hurricane that influenced Pike County. Hurricane Ivan must be added to that total. Therefore, two hurricanes have impacted Pike County over a 54 year period of record.

Illustration 4:



Tropical storms pass in the vicinity of Pike county almost on an annual basis; 47 storms during a 51 year period of record. These storms can produce tornadoes and do cause severe thunderstorms and lightening. (See previous assessment of Severe Thunderstorms / Tornadoes.)

(ii) Future Probability

There is only a limited probability of experiencing hurricane conditions in Pike County. Based on the period of record and the occurrence of hurricane Opal and Ivan there have only been two hurricanes as far inland as Pike County. This is slightly lower than a 4% probability of occurrence. Since the effects of both hurricane Opal and Ivan were high winds and rain, similar to a thunderstorm, the effects of a tropical storm and hurricane can properly be addressed under the "Mitigation Strategy for Severe Thunderstorms / Tornadoes."

A total of eight tropical storms have tracked over Pike County during the 54 year period of record; or a 14 percent probability of an annual occurrence. The other 39 storms that have tracked within 30 miles of Pike County indicate a 72% annual probability of a storm occurring close to Pike County. All of these events can produce rain and wind.

(iii) Location and Extent

Coastal storms do not present a significant hazard due to the inland location of Pike County. However, hurricane Opal, on October 4, 1995, did come ashore and track northward through Alabama producing high winds and heavy rain throughout Pike County. Hurricane Ivan also tracked over Pike County on September 16, 2005. Although no lives were lost, property damage and extensive clean-up of debris (primarily trees) was required. The impact of both hurricanes was county wide including all municipalities.

The tropical storms track near and over all parts of Pike County. These storm systems tend to be large in size and impact the entire area even though the center line track of the storm may be indicated over an edge or near to Pike County. Therefore, tropical storms are considered to impact all of Pike County including all four municipalities.

3. Community Vulnerability to Impact

(i) Land Use and Development Trends

Similar to the vulnerability to “Severe Thunderstorm and Tornadoes” (see previous assessment) it is not considered practical to amend development trends due to all geographic areas of Pike County and the municipalities being subject to the impacts from hurricanes and tropical storms. Due to the primary influence of these storms being rain and high wind similar to thunderstorms and high wind, the mitigation strategies would be the same. In addition, since the amount of rain could result in flooding the mitigation strategies for flood hazard are also applicable to this section.

(ii) Buildings, Infrastructure and Cultural Facilities

All buildings, elevated infrastructure such as water tanks, and facilities throughout Pike County, including the four municipalities, are subject to high wind damage. Existing buildings, infrastructure and facilities in low lying areas and near streams and drainage facilities are subject to temporary inconvenience and damage due to flash flooding caused by heavy rain associated with the remnants of a hurricane or tropical depression.

The local storm conditions associated with Opal resulted in the loss of electric power impacting approximately 28,000 people. Power was restored in urban areas within one week, but in the more sparsely populated rural areas it took nine to ten days to restore electrical service. A total of 60 homes reported damage to the Pike County Emergency Management Office. However, none of the buildings sustained structural damage. The Emergency Management Office estimated that debris clean-up after the storm was a major part of the damage loss.

Storm damage caused by hurricane Ivan also involved electrical power outages, building damage and required extensive debris clean-up. The total estimates of damage and loss are still being tabulated and will have to be added to this section at a later date.

The table "Population and Housing Vulnerable to Coastal (Tropical) Storms and Hurricanes", on the next page, presents the 2000 population and count of residential structures for Pike County, Census Divisions and municipalities as an estimate of personal and structural vulnerability. Mobile homes are reported separately since they are subject to damage caused by high winds.

(iii) Estimate of Dollar Loss

According to the Pike County Emergency Management Agency Hurricane Opal, in October, 1995, caused an estimated $6 million in damage. The majority of the costs were related to the clean-up of debris. Based on historic hurricane and tropical storm events the following losses have occurred.

Loss Resulting from Hurricanes and Tropical Depressions

Event	***Loss Measure***	***Deaths***	***Injuries***	***Property Loss***	***Crop Loss***
Hurricane	Historic Loss	2	0	$100,000	$10,000
	Max. Loss			100,000	10,000
	Average Loss			100,000	10,000

Source: National Climatic Data Center

Population and Housing
Vulnerable to Coastal (Tropical) Storms and Hurricanes
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Total Housing***	***Mobile Homes /a***
Banks Josie CCD	*2,165*	*853*	*340*
Banks	224	92	
Balance of CCD	1,941	761	
Brundidge CCD	*4,414*	*1,894*	*599*
City of Brundidge	2,341	1,014	
Balance of CCD	2,073	880	
Goshen Shady Grove CCD	*2,279*	*941*	*342*
Town of Goshen	300	138	
Balance of CCD	1,979	803	
Henderson Spring Hill CCD	*3,002*	*1,191*	*450*
City of Troy (part)	171	75	
Balance of CCD	2,831	1,116	
Needmore CCD	*1,771*	*708*	*417*
City of Troy (part)	385	147	
Balance of CCD	1,386	561	
Troy CCD	*15,974*	*6,346*	*1,182*
City of Troy (part)	13,379	5,361	
Balance of CCD	2,595	985	
City of Troy total	13,935	5,583	
Pike County	*29,605*	*11,933*	*3,330*

Note: a/ Based on calculations of available Census data. To be updated when additional Census data is released.

Source: U. S. Census Bureau

Hazard: Drought / Heat Wave

1. Summary of the Identified Hazard

Drought - A drought is a natural hazard that occurs either due to a lack of precipitation or rapid transpiration (plants using groundwater) and evaporation of surface water. Drought is typically slow in onset and can extend over wide, multi-county areas and last for extended periods, such as multiple years. Relatively rapid drought relief is seen in surface water resources, but groundwater resources take significantly longer periods to recover due to much slower rates of infiltration and percolation.

The impact of drought is experienced differently by various sectors of the economy and public at different times. Agricultural drought is typically one of the earliest impacts due to a lack of rainfall; particularly if the crop or orchard is not irrigated. If conditions become more severe, then "voluntary water conservation" programs are implemented through water utilities to reduce domestic water use. Typically this includes actions such as increasing consumer awareness to reduce household water use and restricting outside watering and washing vehicles. According to the Office of Water Resources no drought conditions in Alabama have ever been severe enough to close an industry and create temporary job loss.

Heat Wave - There are two types of "extreme heat" to consider. The first is heat that is abnormally high for the season in which it occurs. Crops and orchards may prematurely grow or bloom when high temperature occurs in the late winter or early spring. When the regular seasonal temperatures return a late frost can cause agricultural impacts.

Seasonal Heat Wave - The second type of extreme heat to consider is excessively high temperatures with associated high humidity. These conditions traditionally occur in the summer and result in a limited number of consecutive days having heat alerts or advisories announced on local radio and television stations. These more extreme conditions, which usually last for a limited number of consecutive days, are the basis for heat stress alerts for the elderly, outdoor workers and children. If the heat is prolonged and there is a lack of rainfall, then drought conditions as discussed in first two paragraphs of this section may occur.

2. Description
(i) Prior Occurrences

The National Climatic Data Center (NCDC) data does not report any drought conditions in Pike County for the period January 1, 1950 through December 31, 2003. There is no reported NCDC data regarding the heat stress alerts that may have been issued. From January 1, 1950 through December 31, 2003, a period of 54 years, the NCDC has catalogued one event of high temperature in Pike County. This event occurred in February, 1996 on the same day a new high temperature record was reported as 83 degrees in Montgomery.

The Geological Survey of Alabama (GSA) reports that major droughts affected Alabama in 1954, 1968, 1980 and 1981, 1986 and 1996. The drought of 1986 affected the entire southeastern United States. The GSA's 1996 (issued in 2000) report titled "*Water in Alabama*"

indicates that during late July there were moderate drought conditions that impacted approximately two-thirds of Alabama's counties, including Pike County.

Drought information prior to the above periods can be approximated from the Palmer Drought Severity Index as reported by the GSA's 1984 "*Water in Alabama*" report. The Palmer Drought Severity Index data was plotted from 1884 through 1983 using monthly data to determine monthly extremes and annual averages. (See Illustration 5) The data shows a multi year drought from 1895 through 1899, a two-year drought in 1904 and 1905, and a one year drought in1922. The next drought occurrence was then in 1954 as reported above. The 1968 drought conditions correspond with the average reported on the Palmer Index, but the extreme months indicate that moist periods were also experienced during that year. The same was true for the drought of 1980.

(ii) Future Probability

There is a low to moderate probability that abnormally high temperatures will occur during the winter months in the future. This situation does not threaten facilities, but can result in crop damage due to premature growth and blooming; particularly if the high temperatures are followed by normal seasonal temperatures including frost and freezing.

There is an average probability that seasonal heat waves will occur during summer and fall months similar to historic events. Unfortunately, data is not available regarding historic occurrences.

Drought conditions have been reported by the Geological Survey of Alabama in 13 of the 112 years of record. This indicates a low probability, 11.6 percent, of the occurrence of drought conditions. However, the droughts are occurring with greater frequency in recent decades. In addition, as population increases in Pike County and the four municipalities it means that potable water demands are also increasing. Therefore, a future occurrence of drought would be accentuated because more people would be affected.

(iii) Location and Extent

When either drought or extreme heat conditions occur the effect is widespread over a large area. These conditions would therefore be felt simultaneously in all four municipalities and the unincorporated areas of Pike County.

Illustration 5:

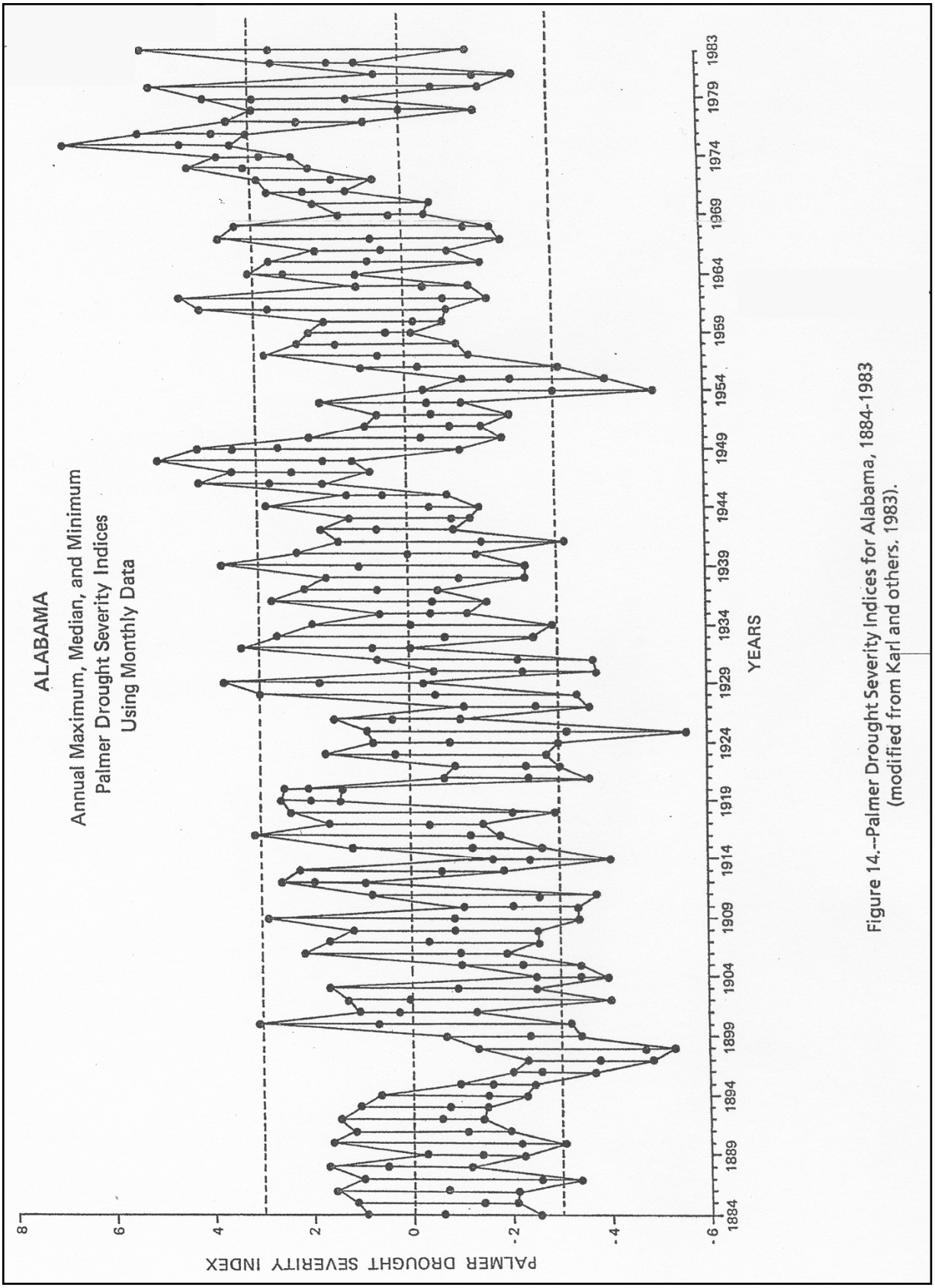


Figure 14.--Palmer Drought Severity Indices for Alabama, 1884-1983
(modified from Karl and others, 1983).

3. Community Vulnerability to Impact
(i) Land Use and Development Trends

Since extreme heat conditions, such as the previous events occurring in the winter months, occur over large areas and do not influence facilities and buildings it is not necessary to change development trends to avoid loss from this type of hazard event.

Seasonal heat events tend to occur over large areas similar to the above extreme heat events it is not necessary to change development trends to avoid loss from this type of hazard event.

Drought conditions impact large areas as evidenced by the recent drought in 1996 that impacted two-thirds of Alabama's counties. Therefore, drought conditions are expected to impact all of Pike County including all four municipalities. Therefore, it is not practical to alter development trends to avoid drought conditions.

(i) Buildings, Infrastructure and Cultural Facilities

A high temperature event during the late winter or early spring is not expected to impact buildings. Crop losses may be encountered in the future; especially if the high temperature event is followed by freezing weather.

A drought event is not anticipated to affect buildings or cultural facilities. Operating stress would be placed on water pumping, treatment, storage and distribution facilities. Local water authorities have water conservation plans that can be implemented to reduce household water consumption. As reported in the initial summary of this section, according to the Office of Water Resources, no historic droughts have been severe enough to cause temporary job loss.

As discussed in the "Summary of Identified Hazard", droughts typically result in water conservation being invoked through directives for voluntary water use restrictions that primarily affect residential customers. The 2000 population and number of occupied residential structure counts that would be impacted are shown by geographic area in the table "Population and Housing Drought and Heat Wave", on the next page. It represents an estimate of personal and structural vulnerability for Pike County, County Census Divisions and the four municipalities.

The number of elderly population for each jurisdiction is also reported due to the higher susceptibility of elderly to heat exhaustion during prolonged periods of summer heat. The largest numeric concentration of elderly population is located in the Troy County Census Division and the City of Troy. Proportionately, as a percent of the total population, the greatest concentrations of elderly are located in the other municipalities (Banks, Brundidge and Goshen).

(ii) Estimate of Dollar Loss

For the period of record the NCDC data reports one extreme heat event, but does not report any damage loss (not even crop loss) as a result of that event. Likewise, the NCDC data does not report a drought event or losses caused by drought. Despite having statewide data indicating that Pike County has experienced droughts, there is no documented record of losses occurring during the historic drought periods.

Population and Housing
Vulnerable to Drought and Heat Wave
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Elderly Population***	***Total Housing***
Banks Josie CCD	*2,165*	*308*	*853*
Banks	224	37	92
Balance of CCD	1,941	271	761
Brundidge CCD	*4,414*	795	*1,894*
City of Brundidge	2,341	*457*	1,014
Balance of CCD	2,073	338	880
Goshen Shady Grove CCD	*2,279*	372	*941*
Town of Goshen	300	66	138
Balance of CCD	1,979	306	803
Henderson Spring Hill CCD	*3,002*	*357*	*1,191*
City of Troy (part)	171	34	75
Balance of CCD	2,831	323	1,116
Needmore CCD	*1,771*	*186*	*708*
City of Troy (part)	385	13	147
Balance of CCD	1,386	173	561
Troy CCD	*15,974*	*1,709*	*6,346*
City of Troy (part)	13,379	1,498	5,361
Balance of CCD	2,595	211	985
City of Troy total	13,935	1,545	5,583
Pike County	*29,605*	*3,727*	*11,933*

Source: U. S. Census Bureau

Hazard: Winter Storms / Freezes (Severe Snowfall or Freezing Ice Storms)

1. Summary of Identified Hazard

Even areas that experience mild winters can be hit by a major winter storm. The storm may include one or all of the following elements; heavy snowfall, ice and extreme cold. Weather forecasters often use the following terms to describe conditions experienced during a winter storm.

Freezing rain - Rain that freezes when the raindrop hits the ground. It creates a coating of ice on roads, walkways, trees and power lines.

Sleet - Rain that turns to ice pellets before reaching the ground. Sleet also causes surface to freeze and become slippery (e.g. roads) and heavy (e.g. power lines).

Winter storm watch - A winter storm is possible in the announced area.

Winter storm warning - A winter storm is or will soon occur in the announced area.

Blizzard Warning - Sustained winds or frequent gusts and considerable falling or blowing snow that reduces visibility to less than one-quarter mile are expected to prevail for a period of three hours or longer.

Frost / freeze warning - Below freezing temperatures are expected.

2. Description of Risk

(i) Prior Occurrences

According to the National Climatic Data Center (NCDC) data Pike County has experienced two snow and ice storms during the 54 year period from January 1, 1950 through December 31, 2003. During the same period the County has experienced three extreme cold weather events. The snow and ice storms occurred on December 18, 1996 and January 2, 2002. The extreme cold weather events occurred on February 3, 1996, March 7, 1996 and January 24, 2003. As shown by the dates for the winter storms and extreme cold weather, none of the events corresponded with each other. On the average there is approximately one severe winter event every decade. As shown by the dates, all five winter storm and cold weather events have occurred in relatively recent times over a period of seven years. When examining a shorter historic period the probability of a winter storm event increases significantly.

(ii) Future Probability

The probability of the reoccurrence of winter storms and extreme cold is relatively low, but can not be discounted. Even considering that the winter storm and extreme cold weather events in Pike County occurred in a recent nine year period it must be remembered that only a total of 12 days were impacted by the combined events. That represents about 0.3% of the total days available in the recent nine-year period. In other words, the impacts are intense for extremely short durations of time.

(iii) Location and Extent

Winter storms and cold weather typically impact large areas. Both the extreme cold weather and winter storm events impacted all of Pike County including the four municipalities plus several adjacent and nearby counties. The winter storms produced heavy snowfall. Both events closed schools and one disrupted local businesses late in the afternoon on the day of the storm. Only one of the winter storms resulted in temporary travel problems. The extreme cold events produced a total of ten days of cold weather. The longest period of cold weather lasted five days. During the record cold temperatures some residents reported frozen water lines. Also, since the March, 1996 cold weather event occurred in the "deep south" after some farmers had completed spring planting there was crop damage reported.

3. Community Vulnerability to Impact

(i) Land Use and Development Trends

Because snow, ice and cold temperatures cover broad geographic areas and cause disruptions in Pike County a low percentage of time, it is not deemed significant to modify land use and development trends. Site designs prepared for individual projects can help minimize the impacts of winter storms and freezes. Streets and driveways that tend to follow topographic contours, as opposed to crossing the contours, result in grade profiles with reduced slope. During winter storm conditions the streets with less slope would be easier and safer to navigate. Site design reviews, conducted in accordance with locally adopted subdivision regulations, provide ample opportunity to achieve such a street pattern.

(ii) Buildings, Infrastructure and Cultural Facilities

All buildings, infrastructure and facilities are influenced by winter storms and cold weather. Damage to infrastructure facilities, such as water lines freezing and snow or ice breaking power lines, causes service disruptions. When winter snow and ice accumulate some facilities, such as schools, are likely to close. Additional accumulations of snow and ice can create road closings. Extreme conditions can also cause a temporary closing of businesses and related, minor economic disruptions. Heating fuels will be consumed at a faster rate during periods of extended and extreme cold and individuals or businesses may experience shortages.

According to the Pike County Emergency Management Agency the primary impact of past winter storms has been the loss of electrical service in some areas. Two of the electric utilities are operated by the municipalities of Brundidge and Troy. Regardless of whether electric outages are serviced by the municipalities or the semi-private utility, the service was promptly restored.

The table “Population and Housing Vulnerable to Winter Storms and Freezes”, on the next page, presents the 2000 population and count of residential structures for Pike County, County Census Divisions and municipalities as an estimate of personal and structural vulnerability. The number of elderly population for each jurisdiction is also reported due to their higher sensitivity to prolonged cold weather and periods of freeze. The largest numeric concentration of elderly population is located in the Troy County Census Division and the City of Troy. Proportionately, as a percent of the total population, the greatest concentrations of elderly are located in the other municipalities (Banks, Brundidge and Goshen).

(iii) Estimate of Dollar Loss

The NCDC data reported two events, one winter storm and one freeze, that had reported losses. That information is summarized in the following table.

Loss Resulting from Winter Storms and Freezes

Event	***Loss Measure***	***Deaths***	***Injuries***	***Property Loss***	***Crop Loss***
Winter Storm	Historic Loss	0	0	$240,000	$320,000
	Max. Loss			240,000	320,000
	Average Loss			240,000	320,000
Freeze	Historic Loss	0	0	$0	$52,000,000
	Max. Loss				52,000,000
	Average Loss				52,000,000

Source: National Climatic Data Center

Population and Housing
Vulnerable to Winter Storms and Freezes
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Elderly Population***	***Total Housing***
Banks Josie CCD	*2,165*	*308*	*853*
Banks	224	37	92
Balance of CCD	1,941	271	761
Brundidge CCD	*4,414*	795	*1,894*
City of Brundidge	2,341	*457*	1,014
Balance of CCD	2,073	338	880
Goshen Shady Grove CCD	*2,279*	372	*941*
Town of Goshen	300	66	138
Balance of CCD	1,979	306	803
Henderson Spring Hill CCD	*3,002*	*357*	*1,191*
City of Troy (part)	171	34	75
Balance of CCD	2,831	323	1,116
Needmore CCD	*1,771*	*186*	*708*
City of Troy (part)	385	13	147
Balance of CCD	1,386	173	561
Troy CCD	*15,974*	*1,709*	*6,346*
City of Troy (part)	13,379	1,498	5,361
Balance of CCD	2,595	211	985
City of Troy total	13,935	1,545	5,583
Pike County	*29,605*	*3,727*	*11,933*

Source: U. S. Census Bureau

Hazard: Wildfires

1. Summary of Identified Hazard

A wildfire is an unwanted fire, often starting without warning, and is usually ignited by lightening or accident.. Wildfires can occur at any time of the year, but are more likely to occur during prolonged dry periods. Once a wildfire is started it is sustained by hillsides, valleys or forest areas where abundant flammable vegetation is available. Areas with abundant flammable vegetation are also vulnerable to wildfires because they are not monitored on a regular basis and small fires go unnoticed. Once the fire has increased in size it is harder to suppress and capable of burning structures and buildings.

2. Description of Risk

(i) Prior Occurrences

According to the National Climatic Data Center (NCDC) data there have been no wildfires in Pike County during the 54 year period from January 1, 1950 through December 31, 2003.

According to the Alabama Forestry Commission from 1999 through 2003 there were 177 fires in Pike County. (See table "Wildfires by Fiscal Year" on next page.) These fires, while considerably smaller than the typical wildfire reported on newscasts, still start as uncontrolled fires and threaten property, forest and crop damage. Over the nine year period Pike County averaged 19.7 fires per year. Over the last five years, 1999 through 2003, the average number of fires per year has increased to 21. According to the Alabama Forestry Commission the majority of the wildfires reported in their database occur in the rural areas.

In addition to the wildfires reported by the Alabama Forestry Commission several local fires are suppressed by the various Pike County fire departments. These fires are often referred to as "brush fires". There is not a regularly maintained database regarding the number and extent of brush fires that are handled locally and not reported to the Alabama Forestry Commission.

(ii) Future Probability

There will continue to be forest and brush fires in Pike County. As growth and development extend into existing forested areas there is a higher probability that property damage and loss of life can occur.

(iii) Location and Extent

The Alabama Forestry Commission did not provide location information regarding the fires In Pike County. However, it was noted that the majority of fires reported in their database are fires located in rural areas. Likewise, the brush fires extinguished by local volunteer fire departments are primarily located in overgrown pastures and undeveloped areas of Pike County. Therefore emphasis is placed on suppressing wildfires in rural areas and the outer edge of the urban-rural interface where development is occurring in wooded areas.

Wildfires by Fiscal Year, 1995 to 2003
Pike County, Alabama

Year	***Number***	***Acres***
1995	15	28.6
1996	17	87.3
1997	20	131.0
1998	20	89.3
1999	15	74.5
2000	46	198.3
2001	9	16.3
2002	24	126.9
2003	11	26.4
Averages		
9 Year	19.7	86.5
5 Year	21.0	90.9

Source: Alabama Forestry Commission

The extent of the fire damage is documented by the following. Over the nine year period the fires in Pike County have burned slightly over 865 acres or 1.36 square miles. The nine year average indicates that an average of 86.5 acres per year are burned. The most recent five year average has increased to 90.9 acres per year. The increasing number of fires per year and the average number of acres burned in recent years is of concern because of the increasing trend of the number of fire incidents and the acreage burned.

3. Community Vulnerability to Impact
(i) Land Use and Development Trends

Within planned neighborhoods and subdivisions, whether located inside a municipality or out of town, there is an increasing residential design trend toward the preservation of trees and increased landscaping. This increases the potential for fire damage because increased amounts of fuel material are available. These issues will be addressed in the "Mitigation Strategy for Wildfires". The trend toward preservation of trees and increased landscaping is considered to be independent of overall land use and development trends. At the present time there is no reason to adjust development trends to address the wildfire natural hazard.

(ii) Buildings, Infrastructure and Cultural Facilities

Fires that are started unintentionally threaten forests, fields (including pastures and crops), structures and inhabited buildings. As growth in Pike County continues and more development occurs in the unincorporated areas the threat to relatively isolated structures and buildings will increase. The table “Population and Housing Vulnerable to Wild Fires” reports the population and housing units in Pike County and by sub areas defined by County Census Divisions and municipalities. The table represents an overall estimate, but emphasis should be placed on the “balance of CCD” totals that correspond to the rural areas of Pike County. The

population and housing in these areas have an increased exposure to wildfires because there is a greater abundance of fuel material. In addition, fires beginning in the sparsely populated areas of Pike County often remain undetected for longer periods and burn larger areas before they are extinguished.

(iii) Estimate of Dollar Loss

The National Climatic Data Center (NCDC) tabulations reported no wildfires or associated losses. A minimal loss due to either a wildfire or brush fire would be the burning of an open field, such as a pasture with dry grass. Although the ground cover would be temporarily lost the grasses are likely to return after a few weeks and some rain. If the field was used for pasture the offsetting cost might be payment for feed if the herd can not be moved to another pasture.

The Alabama Forestry Commission was contacted to obtain an estimated cost per acre for burned timberland. The calculation of loss for timberland should consider three components. First is the value of the timber burned. Second is the cost of men and equipment to suppress the fire. Third is the cost of replanting trees to restore the timber. The loss incurred per acre of burned timberland can be applied to the acres of forest burned to estimate annual losses from fires in Pike County. These estimates of loss assume that no structures or inhabited buildings are involved. If structures of buildings were burned then the amount of loss would have to be increased accordingly. According to the Alabama Forestry Commission structural losses are only noted and no values are assigned. Therefore, the loss estimates presented here are very conservative.

The Alabama Forestry Commission estimates that the statewide, average cost per fire is $2,181 per fire. The average cost was based on 3,847 wildfires occurring in 2004 that ranged from small to large, hot fires. This cost estimate includes the lost timber and the cost of suppression. The Commission estimates that reforestation costs range from $150 to $250 per acre. Based on the data provided an average cost of $200 per acre was used for the cost of replanting in the following estimates of loss. Based on recent five year history averaging 21 fires per year the annual cost attributed to loss and suppression is $45,801.00. The recent five year history indicates an average burning of 90.9 acres per year. At $200.00 per acre this represents a cost of $18,180.00. The total annual loss due to wildfires in Pike County is $63,581.

The annual loss of nearly $63,600.00 is based averages with trends that indicate an increase in both the number of fires and the acreage burned per year. The cost information is based on 2004 cost estimates. Therefore, a continuation of recent trends and inflation would increase future losses.

Population and Housing Vulnerable to Wild Fires
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Total Housing***
Banks Josie CCD	*2,165*	*853*
Banks	224	92
Balance of CCD	1,941	761
Brundidge CCD	*4,414*	*1,894*
City of Brundidge	2,341	1,014
Balance of CCD	2,073	880
Goshen Shady Grove CCD	*2,279*	*941*
Town of Goshen	300	138
Balance of CCD	1,979	803
Henderson Spring Hill CCD	*3,002*	*1,191*
City of Troy (part)	171	75
Balance of CCD	2,831	1,116
Needmore CCD	*1,771*	*708*
City of Troy (part)	385	147
Balance of CCD	1,386	561
Troy CCD	*15,974*	*6,346*
City of Troy (part)	13,379	5,361
Balance of CCD	2,595	985
City of Troy total	13,935	5,583
Balance of County Total	12,805	5,106
Pike County	*29,605*	*11,933*

Note: Shading shows rural, less developed areas.

Source: U. S. Census Bureau

Hazard: Floods

1. Summary of the Identified Hazard

A flood is a high water flow that overtops the natural channel or artificial confines of a stream or river. Flooding can range from a slight rise above the stream banks to a raging torrent of water that inundates a wide area. Floods can cause extensive damage to inundated areas. Floods can also have beneficial effects such as scouring debris from a stream channel and depositing enriched soil in the floodplain.

There are two types of flooding that are of concern in Pike County. The first is the riparian flood areas associated with local streams and rivers. These areas are defined on flood insurance maps as 100-year floodplains. A 100-year floodplain is an area that has a one percent chance of flooding every year. The second is flash floods caused by high intensity rainfall resulting in flooding in multiple locations, including areas outside the mapped flood prone areas, where the natural and man made storm drainage system is inadequate to handle the volume of water.

2. Description of Risk

(i) Prior Occurrences

The National climatic Data Center (NCDC) data for flood hazards covers the 54 year period from January 1, 1950 through December 31, 2003. All three flash floods were reported in 1998. The National Flood Insurance maps indicate that there is flood potential along most streams in Pike County. (See Illustration 6)

(ii) Location and Extent

According to the NCDC data there have been three flash floods that had a countywide impact, including the four municipalities. The January, 1998 event was generated by an intense low pressure system that influenced the western two-thirds of the state of Alabama. All counties involved in this event received sufficient rain to close some roads due to flooding. The March, 1998 event produced over five inches of rain. Flooding in Pike County caused some roads and schools to be closed, but conditions were generally worse in the southern portion of Pike County. The September, 1998 event was caused by remnants of a hurricane and produced over five inches of rain. Flooding occurred and trees were downed by a combination of saturated soils and winds. As a result several roads were impassable and closed.

The Federal Emergency Management Agency flood insurance program maps indicate that unincorporated areas of Pike County and the municipalities of Brundidge, Goshen and Troy are subject to flooding as determined by their maps. Information regarding the flood maps and program status for each of these areas is reported in the table "Flood Insurance Program Status and Maps". See Illustration 6 for a generalized flood area map of Pike County and the municipalities.

Flood Insurance Program Status and Maps

Community		Map		Date Entered Program
Name	Identification Number	Number	Date	
Brundidge	010347A	H 01 - 02	6/1/94	6/1/94
Goshen	010284A	01	4/21/86	4/2/86
Pike County /a	010286A	01 - 52	8/1/87	8/1/87
Troy	010285A	01 - 15	9/18/85	9/18/85

Source: Federal Emergency Management Agency, Map Store and Community Status Book

(iii) Future Probability

The fact that all three reported flash flood events were reported relatively late in the historic period covered by the data indicates that some earlier events may have been unreported. In addition, over time the amount of development in Pike County, adding impervious surface, has increased the volume of storm water runoff. It is therefore estimated that there is a moderate to high probability that flash floods will occur again in the future.

3. Community Vulnerability to Impact

(i) Land Use and Development Trends

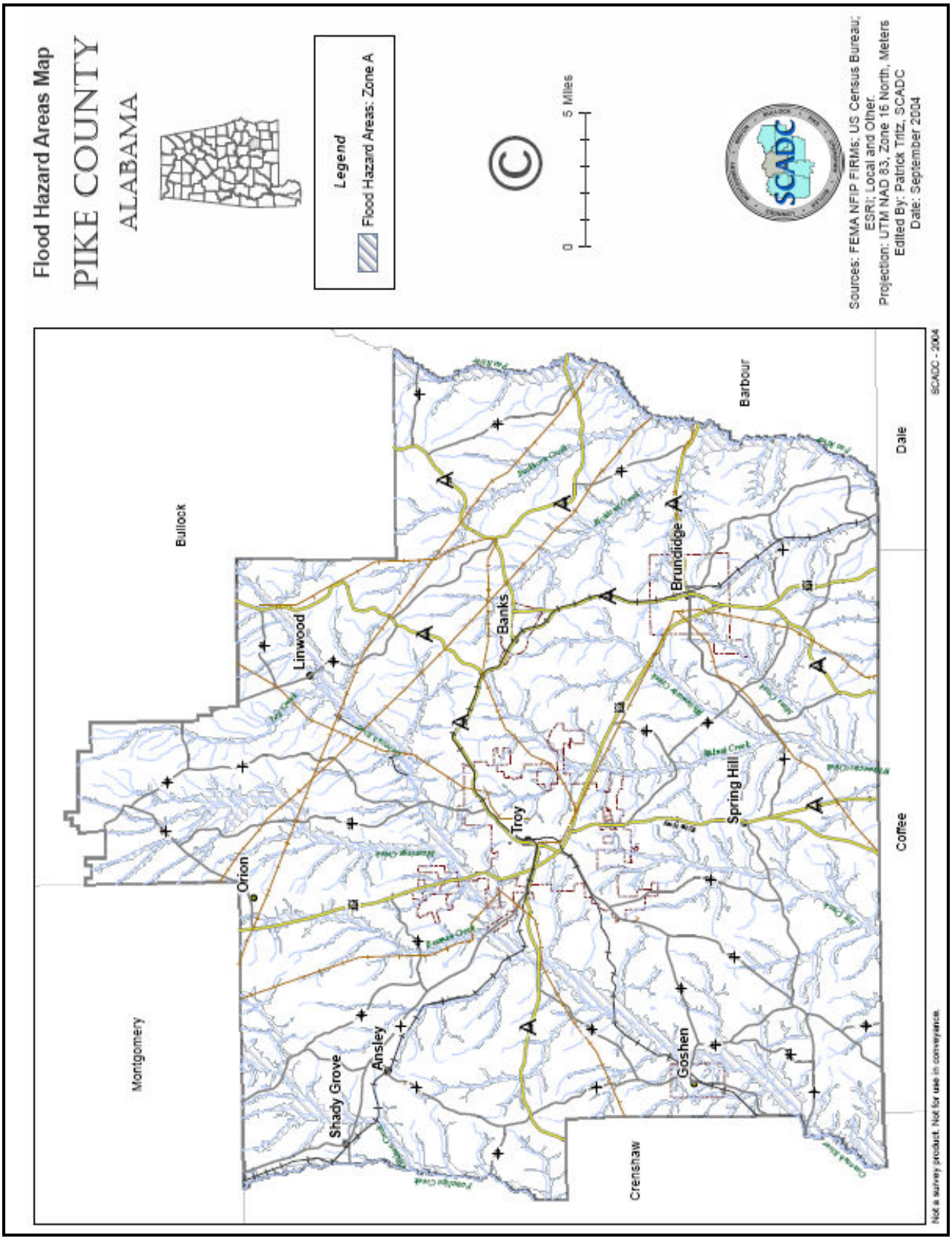
Land use and site development can exacerbate or relieve future flash flooding conditions. There are two factors that can be drawn from natural conditions and historic events. First, the rivers and major streams in Pike County generally flow from north to south. Second, the development of more impervious surface area increases storm water runoff. As storm water runoff builds in the stream the volume of water increases in the southern part of the County. In addition, the time of concentration needs to be varied to avoid having high water flows concentrate in the southern portions of rivers and streams at the same time.

The types of corrective action required are site planning and development in nature as opposed to overall changes in land use and development trends. As part of the development control process, implemented through local zoning ordinances and subdivision regulations, design features can be implemented such as such as limiting impervious surfaces and providing detention ponds to stagger runoff flows. Techniques to address these design issues are addressed in the "Mitigation Strategy for Floods" section of the next chapter.

(ii) Buildings, Infrastructure and Cultural Facilities

The past flash floods were reported as having countywide impact with one event more heavily influencing the southern part of Pike County. The history of previous events indicates that roads and bridges are subject to closure, certain areas may become inaccessible due to roads being closed and some facilities, such as schools, may be closed due to inaccessibility or saturated (soils) grounds.

Illustration 6:



According to Pike County officials there are no inhabited structures located in the flood hazard areas designated on the flood insurance maps. Therefore, information reporting population and housing units subject to stream and riverine flooding by various sub areas of Pike County is considered unnecessary.

(iii) Estimate of Dollar Loss

The NCDC tabulations indicated the flash flood losses incurred in 1998 resulted in the following profile of losses.

Loss Resulting from Flash Floods

Event	***Loss Measure***	***Deaths***	***Injuries***	***Property Loss***	***Crop Loss***
Flash Floods	Historic Loss	0	0	$150,000	$25,000
	Max. Loss			75,000	10,000
	Average Loss			50,000	8,335

Source: National Climatic Data Center

Hazard: Coastal and Riverine Erosion, Landslides and Sinkholes

1. Summary of the Identified Hazard

Coastal Erosion - Due to the inland location of Pike County, coastal erosion is not considered to be a hazard.

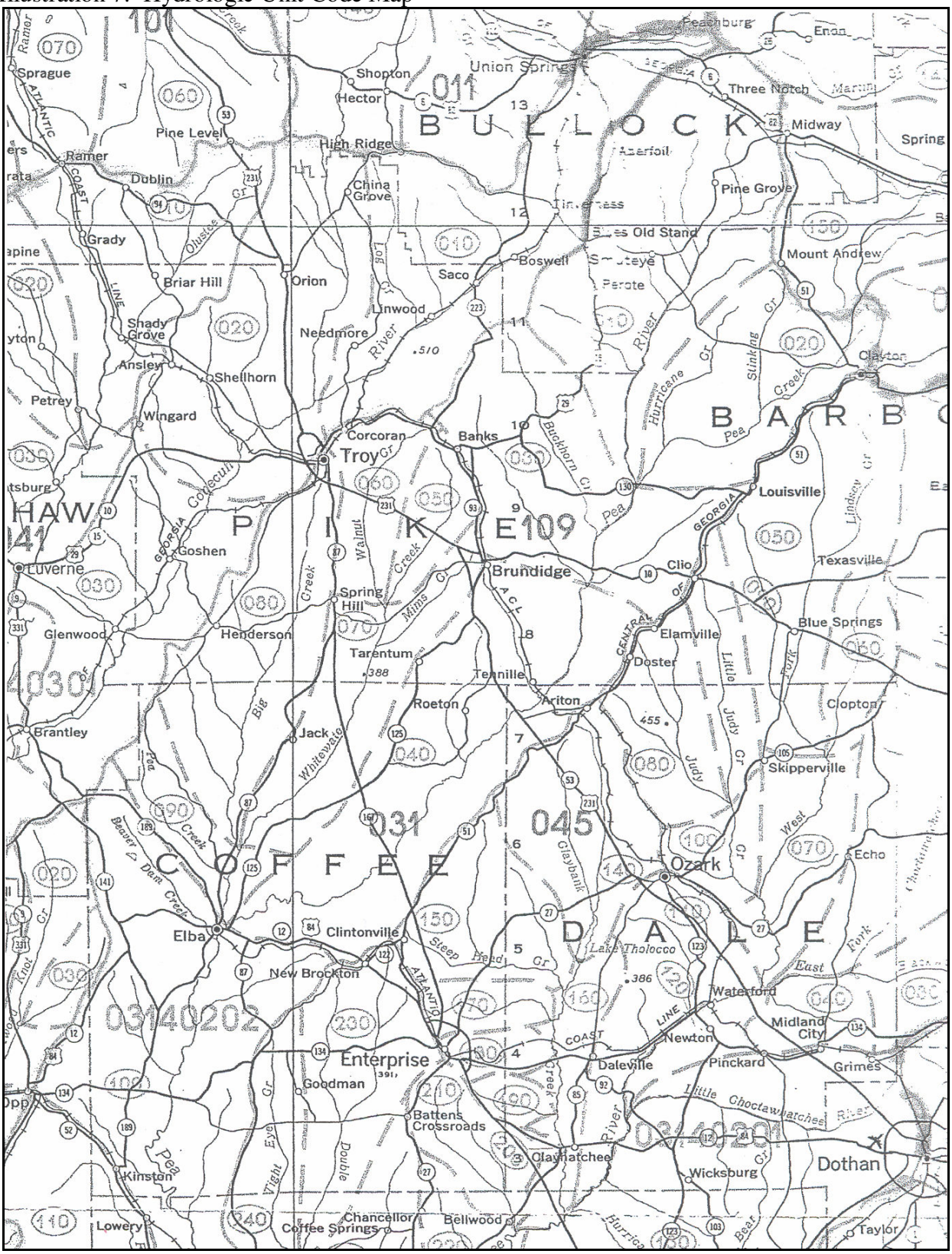
Riverine Erosion - The two main stem rivers located in Pike County are the Conecuh and Pea. Both the Conecuh and Pea Rivers are considered to lie in the "Gulf Basins" area of Alabama. Rivers in this area of Alabama generally flow northeast to south - southwest and cross the Panhandle of the state of Florida prior to outfall in the Gulf of Mexico. The outfall of the Conecuh River from Pike County is located at the southwest corner of the county on the boarder between Pike and Crenshaw Counties. The river watershed proceeds north-northeast passing approximately three miles west of the Troy corporate limits. The Pea River is the east boundary of Pike County along the Barbour County line. The outfall of the Pea River from Pike and Barbour County is through a small portion of the northwest corner Dale County and then the river flows into Coffee County. (See illustration 7)

The Conecuh River drainage basin in Alabama encompasses 2,490.39 square miles including the Upper Conecuh, Patsaliga, and Sepulga. Only the northern most portions of the Conecuh and Patsaliga watersheds flow through Pike County. In the Conecuh hydrologic unit area there are 118.89 square miles of drainage area in Bullock County and 11.46 square miles of drainage area in Montgomery County that are upstream and flow into Pike County. Collectively this represents only 5.2 percent of the total Conecuh watershed. In the Conecuh watershed a total of 225.00 square miles of drainage area, 9.0 percent of the total, is located in Pike County.

The Patsaliga watershed contains a total of 601.66 square miles in Alabama. Only 77.41 square miles, or 12.87 percent, are located in Montgomery County, upstream of Pike County, and 46.44 square miles, or 7.7 percent, is located in Pike County. The Patsaliga and Conecuh watershed areas merge on the Pike and Crenshaw County line. Therefore, even though both watersheds are in the Conecuh River basin hydrologic area, their influence on Pike County is separate and distinct.

The Pea River basin has a total drainage area of 1,451.96 square miles in Alabama. Of the total area, only 330.42 square miles (172.92 square miles in Barbour County and 157.50 square miles in Bullock County) are located upstream of Pike County. This indicates that 22.76 percent of the watershed is upstream of Pike County. Along the area where the Pea River separates Barbour and Pike Counties there are 44.38 square miles of drainage area in Pike County and 15.54 square miles in Barbour County. Other tributaries in the Pea River basin that are located in Pike County, but that flow into the Pea River in Coffee County, include: Whitewater Creek - 72.18 square miles; Walnut Creek - 44.29 square miles; and Big Creek - 63.05 square miles.

Illustration 7: Hydrologic Unit Code Map



Landslide - A "landslide" is defined as a perceptible downward and outward movement of slope forming soil, rock and vegetation under the influence of gravity. Landslides can be triggered by both natural and man-made changes in the environment. These changes may result from weakness in the composition of the soil, heavy rain or changes in the groundwater level. Man-made landslides may result from changes in slope caused by terracing for agriculture, cut-and-fill in construction areas, mining operations, or changes in soil moisture due to changes in irrigation, groundwater or surface water.

Information provided by the Geologic Survey of Alabama (GSA) indicates that Pike County is not in an area that is considered susceptible to landslide incidents. The GSA data indicates that less than 1.5 percent of the land area of Pike County would be subject to landslide incidents. (See Illustration 8)

Sinkholes and Subsistence - Sinkholes are caused by a loss of support, roof collapse and / or raveling. Loss of support occurs when decreases of groundwater reduce the bouyant support of groundwater cavities. The collapse of the roof causes a subsurface cavity. Raveling is the slow erosion of unconsolidated sediments moving from one area into another underground opening. A visible sinkhole is formed when the collapse of an unsupported opening results in the enlargement of the opening beyond the ability of the covering material (rock or soil) to bridge the opening.

Information provided by the Geologic Survey of Alabama (GSA) indicates that the southern portions of Pike County is located in an area of Alabama that has carbonate rock outcroppings that could be subject to sinkholes and subsidence. (See Illustration 9) Additional data from GSA indicates that Pike County is not considered to have active sinkholes. (See Illustration 10) The carbonate rock out cropping areas in southern Pike County that could be most subject to subsidence tend to be located along lower areas (valleys) associated with creeks and streams where natural stream bank erosion also occurs. Since some of these areas have associated flood plains, that natural hazard should be of primary concern.

2. Description of Risk
(i) Prior Occurrences

Landslides, Sinkholes / Subsidence - During the period of record there are no reported prior occurrences of landslides or subsistence. There is no timeframe associated with the landslides and subsistence information secured from the U. S. Geological Survey and the Geological Survey of Alabama.

Riverine and Stream Bank Erosion - It should be assumed that stream bank erosion is a naturally occurring event along streams and rivers over the entire lifetime of the stream. The variation in the amount of erosion is due to the geologic structure of the streambed, stability of the stream banks and riparian land uses. There is no specific information as to whether the volume of erosion is increasing or decreasing over recent time. However, since flash floods were reported as occurring relatively late in the

Illustration 8:

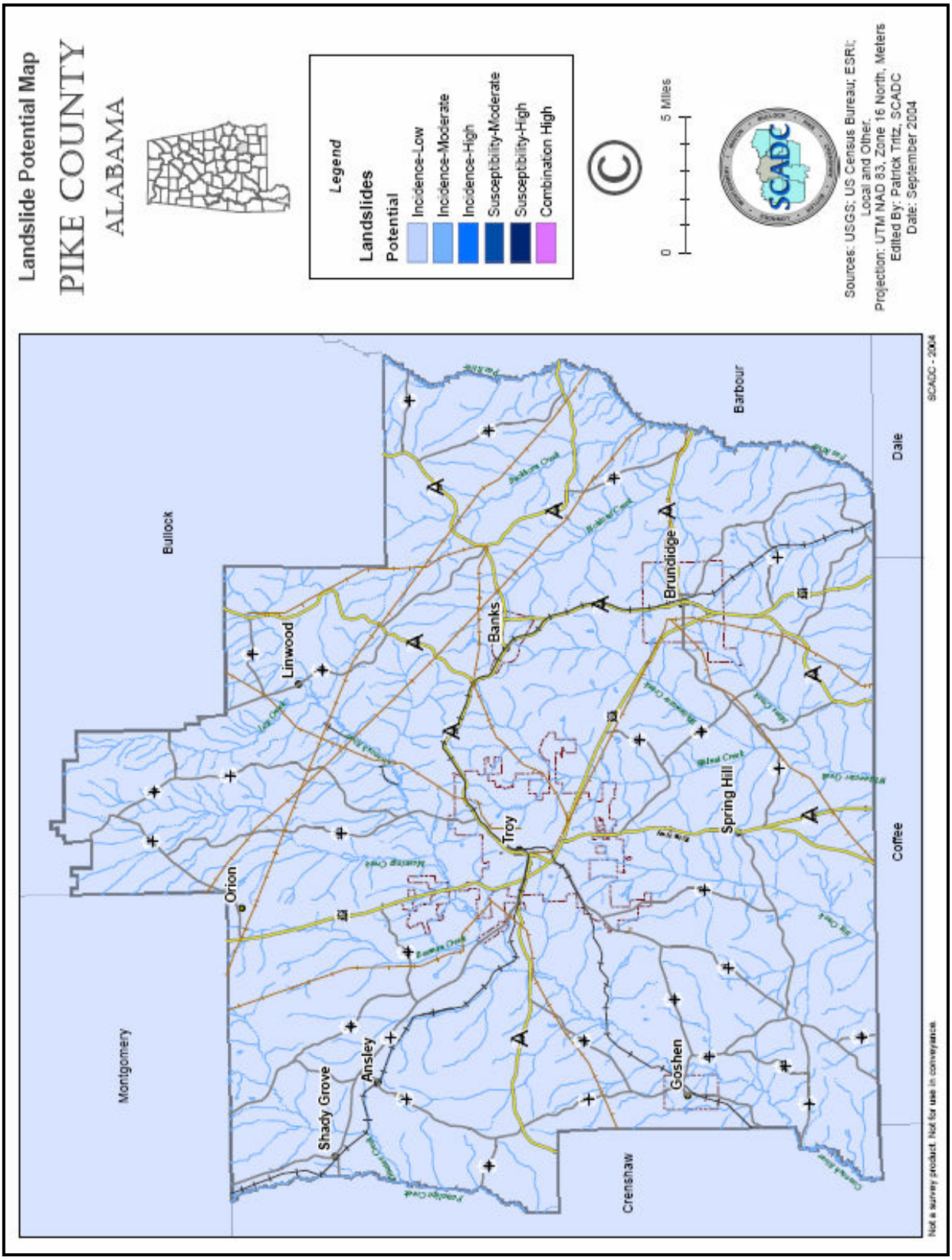


Illustration 9:

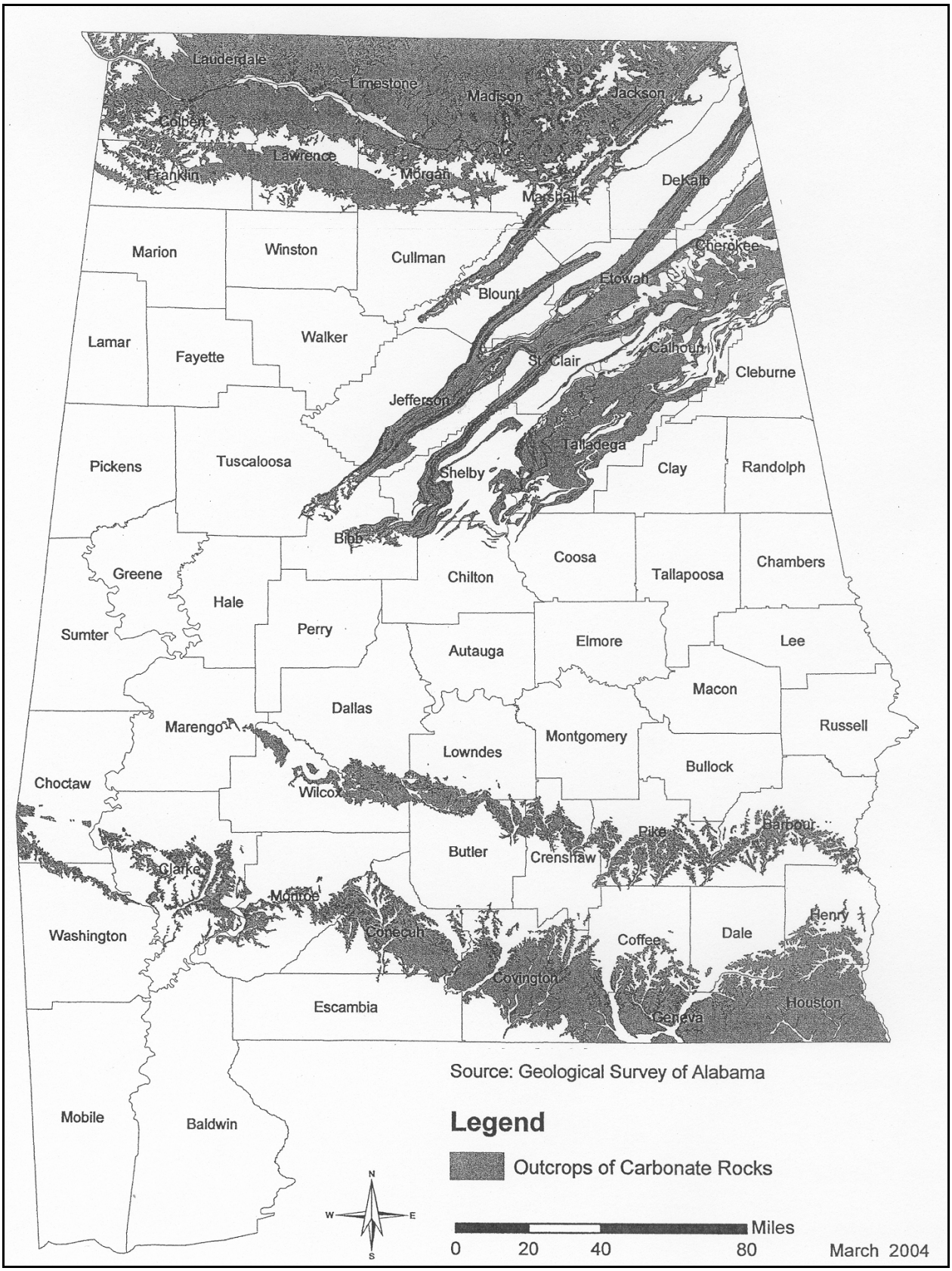
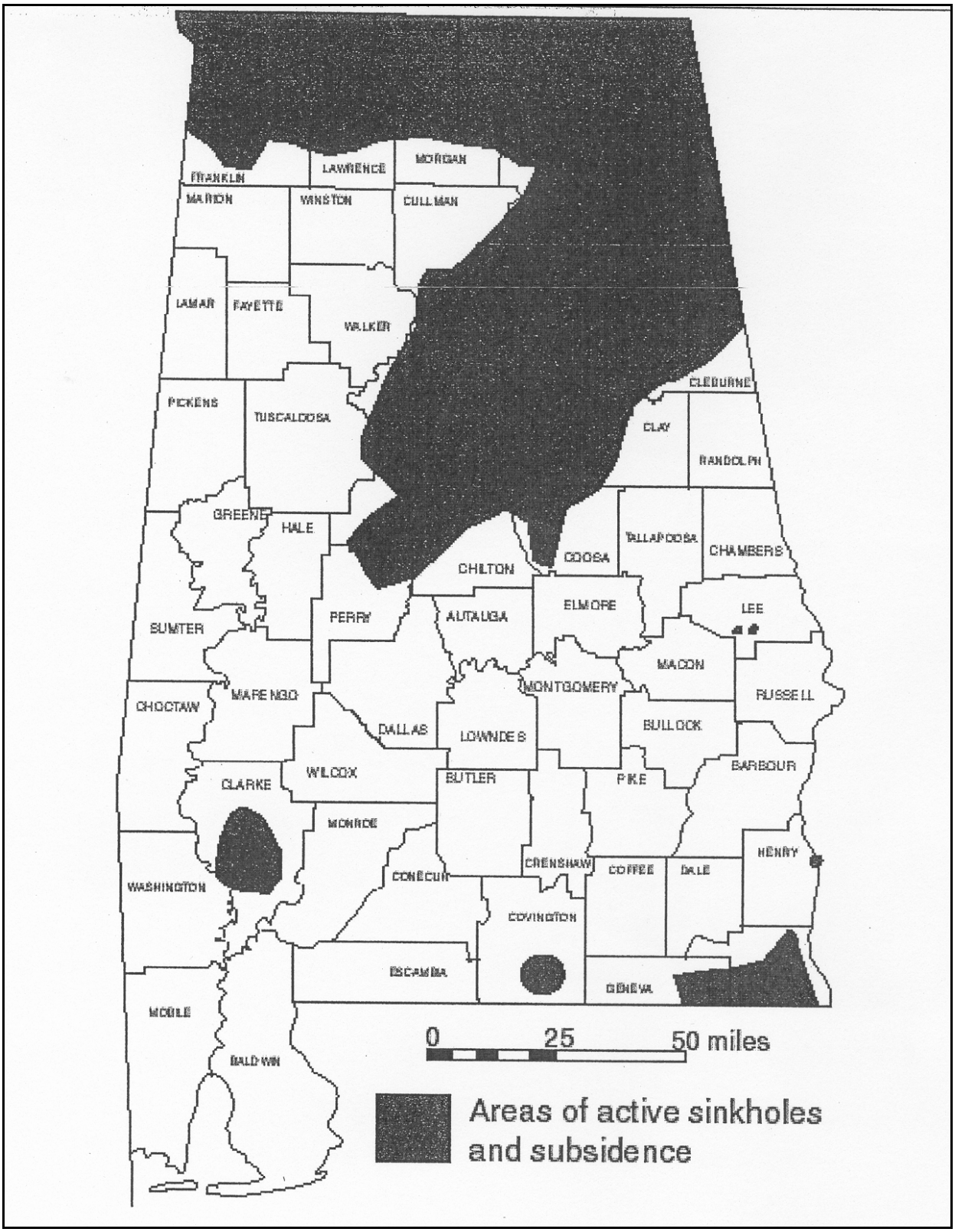


Illustration 10:



Source: Geologic Survey of Alabama

historic period of record, it could be assumed that during certain rain events that the volume and velocity of water in the local streams has increased. Under these conditions it would be reasonable to assume that more areas along local stream banks are being eroded.

(ii) Future Probability

Landslides, Sinkholes / Subsidence - It is assumed that landslides and subsistence have a low to negligible potential of future occurrence. Man induced landslides would only occur when the angle of repose on new grading work is too steep. It is assumed that engineering and design best management practices (BMPs) will minimize the future occurrence of man induced landslides.

Riverine and Stream Bank Erosion - River and stream bank erosion is expected to continue as a natural function of stream morphology. To minimize the acceleration of naturally occurring stream channel erosion undisturbed stream banks should be preserved and developments that increases stream flow velocity and volume should be limited. In this manner it is expected that naturally occurring erosion will continue, but that new problem areas will be avoided.

(iii) Location and Extent

Landslides, Sinkholes / Subsidence - Pike County has limited areas with carbonate rock outcroppings that could be subject to landslides and subsistence and they are primarily located in the valley areas of southern Pike County. According to the GSA data there is no historic record of landslide or subsidence in Pike County. According to the Pike County Emergency Management Office, there are no known locations where active landslide or subsidence events have occurred in recent years.

Riverine and Stream Bank Erosion - The locations of the Conecuh and Pea River are described in the above "Summary of the Identified Hazard". Pike County has limited land areas subject to riverine erosion along the main stem branches of the Conecuh and Pea Rivers. In addition, the headwater drainage areas upstream of Pike County produce limited amounts of runoff. The relatively low volume water flows limit stream and river bank erosion.

3. Community Vulnerability to Impact

(i) Land Use and Development Trends

Landslides, Sinkholes / Subsidence – Based on available data Pike County does not presently have any landslide, sinkhole or subsidence activity. Although there are no locations where these activities are occurring, the geologic structure of southern Pike County indicates that the southern portion of Pike County where there is carbonate rock outcropping could be susceptible to future occurrences of such activities. Since there are no known locations of activity, and the location and foundation of structures can planned based on site specific soil data there is no need to modify land use and development trends at the present time.

Riverine and Stream Bank Erosion - Since stream bank erosion occurs along all rivers and local streams, and especially those that are subject to flooding, local enforcement of the provisions of the flood insurance program can be used to prevent future structural losses due to

naturally occuring erosion in these areas. No modifications to land use and development trends are considered necessary.

(ii) Buildings, Infrastructure and Cultural Facilities

Landslides, Sinkholes / Subsidence – No buildings, infrastructure or cultural facilities are considered subject to landslide, sinkhole or subsidence due to the lack of such activity during the historic period.

Riverine and Stream Bank Erosion - Riverine and stream bank erosion hazard does not currently impact buildings and cultural facilities. However, at locations where bridges and utilities span streams and waterways there is a potential for erosion to expose footings, headwalls and piping. Traditional engineering practices and construction best management practices (BMPs) are ample to address stream erosion impacting infrastructure.

For additional information regarding potential loss of infrastructure, such as bridges and utilities, see the section addressing flood hazard. Due to the entire county, including the four municipalities, having a low potential for landslide, sinkholes and subsidence the population and housing units for selected sub areas of Pike County are reported in the table "Population and Housing Vulnerable to Landslide, Sinkhole and Subsidence." Although the entire county is reported with a low probability, the County Census Divisions of Brundidge (including the City of Brundidge), Henderson Spring Hill, and the southern triangular tip of Goshen – Shady Grove (including the Town of Goshen) are aligned with the carbonate rock outcropping pattern in southern Pike County. In theory, this area would have a slightly higher risk of future activity than northern Pike County.

(iii) Estimate of Dollar Loss

The National Climatic Data Center (NCDC) tabulations did not report any losses for landslides, sinkholes or erosion in Pike County. There is no known local database estimating the actual or potential losses due to these types of natural hazards.

Population and Housing Vulnerable
To Landslide, Sinkhole and Subsidence
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Total Housing***
Banks Josie CCD	*2,165*	*853*
Banks	224	92
Balance of CCD	1,941	761
Brundidge CCD	*4,414*	*1,894*
City of Brundidge	2,341	1,014
Balance of CCD	2,073	880
Goshen Shady Grove CCD	*2,279*	*941*
Town of Goshen	300	138
Balance of CCD	1,979	803
Henderson Spring Hill CCD	*3,002*	*1,191*
City of Troy (part)	171	75
Balance of CCD	2,831	1,116
Needmore CCD	*1,771*	*708*
City of Troy (part)	385	147
Balance of CCD	1,386	561
Troy CCD	*15,974*	*6,346*
City of Troy (part)	13,379	5,361
Balance of CCD	2,595	985
City of Troy total	13,935	5,583
Pike County	*29,605*	*11,933*
Area with Carbonate Rock	7,545	3,148

Note: Shading shows approximate areas corresponding to carbonate rock geology.

Source: U. S. Census Bureau

Hazard: Dam or Levee Failure

1. Summary of the Identified Hazard

The breach of a structure designed to retain water would result in high volume and velocity water flows that could destroy buildings and infrastructure and would inundate land that is normally dry. Typically water retention structures, such as dams or levees, are built to create a beneficial use of water or to protect property. The vested interest in the beneficial use, plus the cost of construction, usually promotes adequate design of water retention structures. However, proper maintenance of water retaining facilities, especially if they are of earthen construction, is essential to the long term structural integrity.

Since Pike County is located in the headwater area of the Conecuh and Pea River hydrologic areas there is limited ground surface area to generate an adequate water runoff to reach a volume where very large water impoundments are practical. (See the summary of Riverine Erosion in the prior section "Coastal and Riverine Erosion, Landslides and Sinkholes" for a more complete description of the Conecuh and Pea River basins.). Typically farm ponds, located throughout Pike County, are limited in size and water volume.

The U. S. Department of Agriculture Natural Resource Conservation Service (formerly the Soils Conservation Service) updated the U. S. Army, Corps of Engineers National Inventory of Dams (NID) to be current through 1995. The location of dams located in Pike County that were included in the “National Inventory of Dams” are graphically shown on Illustration 11.

The fact that the state of Alabama does not have "dam safety" legislation is an administrative consideration regarding dam and levee failures. Due to the lack of legislation there is no legal basis for the regulation of water impoundments nor to provide access to private property to perform dam inspections.

2. Description of Risk

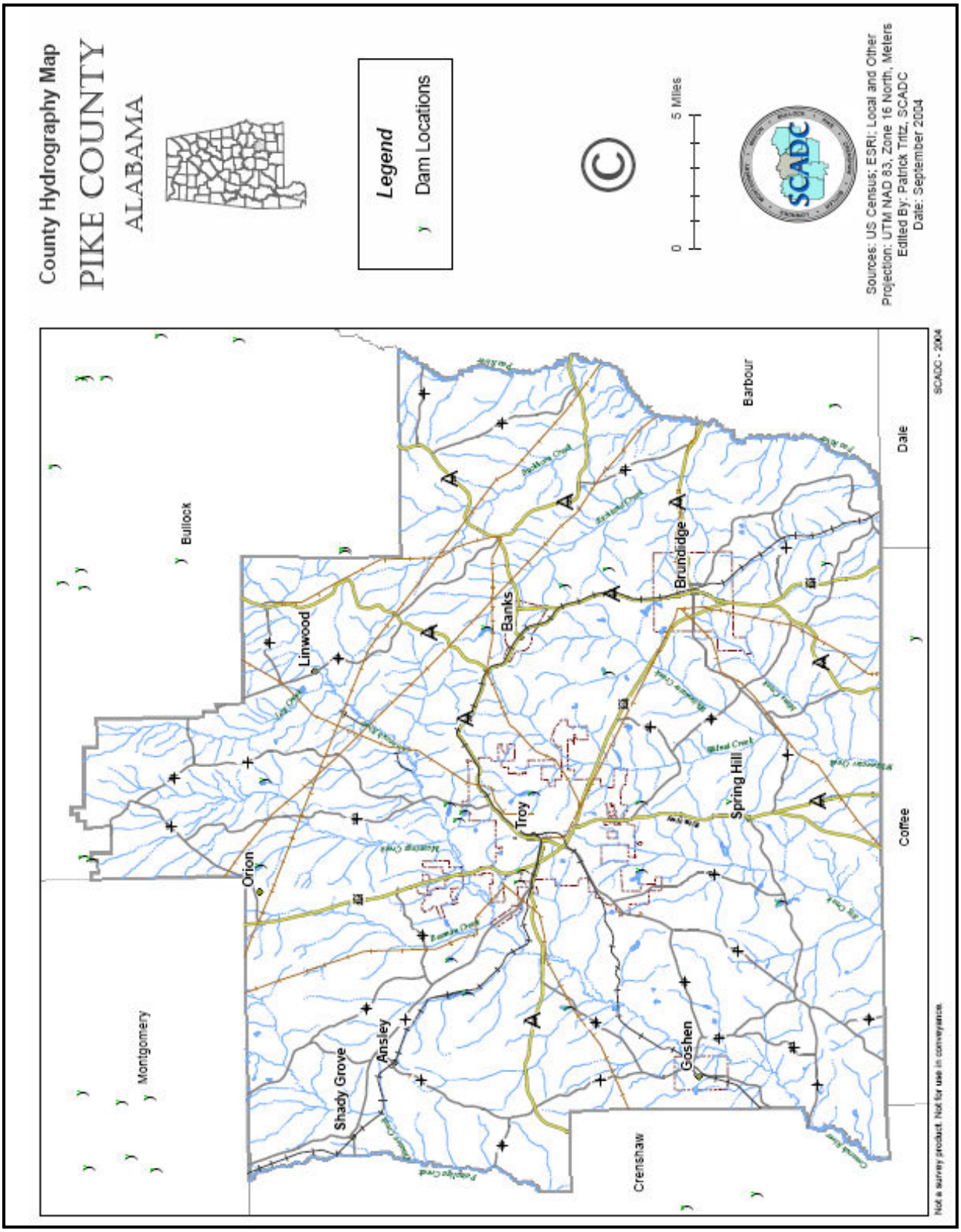
(i) Prior Occurrences

There are no official records of prior dam or levee failures in any of the four municipalities or the unincorporated portions of Pike County. There is no time frame associated with this information. However, during the public hearing it was noted that one of the dams located north of Troy was breached. It caused localized flooding on the owners property and flowed down a short tributary to Conecuh River.

(ii) Future Probability

The dam inventory lists the probability of failure as low for all 21 dams in Pike County. See the table “Pike County Inventory of Dams and Hazard Status”. Based on this information it is anticipated that there is a low probability of future dam or levee failure throughout Pike County and all the municipalities.

Illustration 11:



Pike County
Inventory of Dams and Hazard Status

NID_ID	DAM_NAME	OTHER_NAME	HAZARD
AL00180	YOUNGBLOOD		LOW
AL00181	MILTON CARTER		LOW
AL00182	PIKE COUNTY LAKE		LOW
AL00183	FOY INGRAM POND		LOW
AL00185	SORRELL LAKE DAM	PINE LAKE	LOW
AL00186	COPELAND	COPELANDS PONDS	LOW
AL00188	CROWES		LOW
AL00190	HENDERSON LAKE		LOW
AL00191	PIKE POND		LOW
AL01403	MORGANS POND		LOW
AL01916	HARRIS LAKE DAM		LOW
AL01917	W R CHAPMAN LAKE DAM NO 1		LOW
AL01918	W R CHAPMAN LAKE DAM NO 2		LOW
AL01921	BROOKS FARM POND DAM		LOW
AL01922	SANDERS POND DAM		LOW
AL02246	BILL CHAPMAN POND		LOW
AL02247	BILL CHAPMAN POND		LOW
AL02248	HAROLD FREEMAN POND		LOW
AL02249	HARRIS POND		LOW
AL02250	J M CURTIS POND		LOW
AL02251	ROBERT DUNN		LOW

(iii) Location and Extent

The locations of dams in Pike County are shown on Illustration 11. Although areas downstream from these dams are potentially at risk a dam break analysis would be required to accurately determine the location of impacts. This information is not available at the present time. As noted later in this section, the municipalities are considered to have a lower risk exposure due to the natural drainage areas flowing away from the populated areas.

The dam inventory contains information on the height and width of the dam structure (measured in feet); the volume of water stored (measured in acre feet); and the maximum discharge (measured in cubic feet per second - cfs). Structural failure could occur at any dam, but the taller and wider structures typically raise concern due the size characteristics involved. However, the volume of water stored and the maximum discharge indicate the quantity of water available and the rate at which it would be released. The following tables rank each dam in Pike County by height, width, water storage capacity and maximum discharge. (See following tables.)

3. Community Impact

(i) Land Use, Development Trends and Drainage Patterns

The Town of Banks is located on a high knob of land at the intersection of Highways 29 and 130. All of the drainage areas flow away from the current municipal corporate limits. The City of Brundidge is also located on high ground near the intersection of Highways 231, 10 and 93. Similar to Banks, all natural drainage flows away from the municipal corporate limits. In both municipalities impoundments located on the fringe of the corporate area or in the nearby vicinity would flow away from the corporate limits.

The Town of Goshen is located west of the Conecuh River near the intersection of Highway 28 and 5. Drainage tributaries to the Conecuh that begin west of Goshen flow through and near the community enroute to outfall in the river. Impoundments such as Bill Chapman Pond (not one of the five major impoundments) pose a hazard to the municipality. However the risk is reduced because there is moderate storage capacity so the maximum discharge would be limited in duration.

The City of Troy is located on high ground and the natural drainage pattern is away from the corporate limits of the municipality. For example, Henderson Lake, located west (behind) the Pike Pioneer Museum, is located close to the City of Troy, but water naturally flows away from the city.

Due to all four municipalities being located on high ground with natural drainage patterns that flow away from the corporate areas a dam failure would not impact densely developed areas of the municipalities.

Pike County Lake, another of the large impoundments with a high discharge rate is located south-southwest of Troy. In the event of dam breach the water would flow less than a mile down a tributary branch to Big Creek. Big Creek has an associated floodplain and development has been restricted so there is minimal potential for loss of property and life.

Dams by Height
Pike County, Alabama

DAM_NAME	RIVER	NID_HEIGHT
HARRIS LAKE DAM	TR BOWDEN MILL CREEK	35
W R CHAPMAN LAKE DAM NO 2	TR CONECH RIVER	29
ROBERT DUNN	TR-WALNUT CREEK	26
PIKE COUNTY LAKE	TR-BIG CREEK	25
PIKE POND	TR-BEAVER POND BRANCH	24
BILL CHAPMAN POND	TR-CONNECUH RIVER	23
HENDERSON LAKE	HANNING CREEK	22
HARRIS POND	TR-BOWDEN MILL CREEK	22
BROOKS FARM POND DAM	TR OLUSTEE CREEK	22
HAROLD FREEMAN POND	TR-BEEMAN CREEK	20
MILTON CARTER	TR-INDIAN CREEK	20
BILL CHAPMAN POND	TR-CONNECUH RIVER	18
W R CHAPMAN LAKE DAM NO 1	TR CONECH RIVER	17
SANDERS POND DAM	TR BIG CREEK	17
J M CURTIS POND	TR-WALNUT CREEK	16
YOUNGBLOOD	YOUNGBLOOD CREEK	15
MORGANS POND	MORGAN BRANCH	15
COPELAND	TR-HANNINGS CREEK	15
FOY INGRAM POND	RICHLAND CREEK	15
SORRELL LAKE DAM	RICHLAND CREEK	13
CROWES	PERSIMMON CREEK	10

Dams by Width
Pike County, Alabama

DAM_NAME	RIVER	YEAR_COMPL	DAM_LENGTH
HENDERSON LAKE	HANNING CREEK	1972	900
SORRELL LAKE DAM	RICHLAND CREEK	1952	810
MILTON CARTER	TR-INDIAN CREEK	1968	793
PIKE COUNTY LAKE	TR-BIG CREEK	1950	740
HARRIS LAKE DAM	TR BOWDEN MILL CREEK	1977	670
YOUNGBLOOD	YOUNGBLOOD CREEK	1945	660
W R CHAPMAN LAKE DAM NO 1	TR CONECH RIVER	1965	615
CROWES	PERSIMMON CREEK	1955	602
ROBERT DUNN	TR-WALNUT CREEK	1981	600
BILL CHAPMAN POND	TR-CONNECUH RIVER	1975	600
BROOKS FARM POND DAM	TR OLUSTEE CREEK	1965	554
PIKE POND	TR-BEAVER POND BRANCH	1960	548
SANDERS POND DAM	TR BIG CREEK	1965	530
J M CURTIS POND	TR-WALNUT CREEK	1979	525
HARRIS POND	TR-BOWDEN MILL CREEK	1978	500
HAROLD FREEMAN POND	TR-BEEMAN CREEK	1978	500
MORGANS POND	MORGAN BRANCH	1964	400
BILL CHAPMAN POND	TR-CONNECUH RIVER	1968	350
COPELAND	TR-HANNINGS CREEK	1954	300
FOY INGRAM POND	RICHLAND CREEK	1967	250
W R CHAPMAN LAKE DAM NO 2	TR CONECH RIVER	1976	235

Dams by Storage Capacity
Pike County, Alabama

DAM_NAME	RIVER	YEAR_COMPL	NID_STOR
HENDERSON LAKE	HANNING CREEK	1972	728
ROBERT DUNN	TR-WALNUT CREEK	1981	437
PIKE COUNTY LAKE	TR-BIG CREEK	1950	300
HARRIS LAKE DAM	TR BOWDEN MILL CREEK	1977	249
MORGANS POND	MORGAN BRANCH	1964	218
HARRIS POND	TR-BOWDEN MILL CREEK	1978	192
YOUNGBLOOD	YOUNGBLOOD CREEK	1945	182
SORRELL LAKE DAM	RICHLAND CREEK	1952	164
BILL CHAPMAN POND	TR-CONNECUH RIVER	1968	132
HAROLD FREEMAN POND	TR-BEEMAN CREEK	1978	124
MILTON CARTER	TR-INDIAN CREEK	1968	110
COPELAND	TR-HANNINGS CREEK	1954	109
BILL CHAPMAN POND	TR-CONNECUH RIVER	1975	103
PIKE POND	TR-BEAVER POND BRANCH	1960	96
CROWES	PERSIMMON CREEK	1955	88
J M CURTIS POND	TR-WALNUT CREEK	1979	73
W R CHAPMAN LAKE DAM NO 1	TR CONECH RIVER	1965	68
BROOKS FARM POND DAM	TR OLUSTEE CREEK	1965	66
FOY INGRAM POND	RICHLAND CREEK	1967	62
SANDERS POND DAM	TR BIG CREEK	1965	56
W R CHAPMAN LAKE DAM NO 2	TR CONECH RIVER	1976	19

Dams by Maximum Discharge
Pike County, Alabama

DAM_NAME	RIVER	YEAR_COMPL	MAX_DISCH
YOUNGBLOOD	YOUNGBLOOD CREEK	1945	5590
HENDERSON LAKE	HANNING CREEK	1972	3642
BILL CHAPMAN POND	TR-CONNECUH RIVER	1975	2151
PIKE COUNTY LAKE	TR-BIG CREEK	1950	1845
HARRIS POND	TR-BOWDEN MILL CREEK	1978	1696
HARRIS LAKE DAM	TR BOWDEN MILL CREEK	1977	1680
W R CHAPMAN LAKE DAM NO 1	TR CONECH RIVER	1965	1658
MORGANS POND	MORGAN BRANCH	1964	1500
PIKE POND	TR-BEAVER POND BRANCH	1960	1360
SANDERS POND DAM	TR BIG CREEK	1965	1353
HAROLD FREEMAN POND	TR-BEEMAN CREEK	1978	1146
BILL CHAPMAN POND	TR-CONNECUH RIVER	1968	1055
ROBERT DUNN	TR-WALNUT CREEK	1981	1000
J M CURTIS POND	TR-WALNUT CREEK	1979	683
COPELAND	TR-HANNINGS CREEK	1954	402
FOY INGRAM POND	RICHLAND CREEK	1967	300
MILTON CARTER	TR-INDIAN CREEK	1968	180
CROWES	PERSIMMON CREEK	1955	134
W R CHAPMAN LAKE DAM NO 2	TR CONECH RIVER	1976	127
BROOKS FARM POND DAM	TR OLUSTEE CREEK	1965	110
SORRELL LAKE DAM	RICHLAND CREEK	1952	0

Youngblood Lake is located west-northwest of Troy. A dam breach would only cause problems where Youngblood Creek crosses Highway 25 immediately south of the impoundment. The discharge from a dam breach would flow approximately two miles down Youngblood Creek and be discharged into the Conecuh River. Therefore, even though this impoundment is located in rural Pike County, the potential for impact is minimized.

Harris Lake Dam is located south-southwest of the City of Brundidge. Any discharge from a dam breach would flow approximately three miles down Bowden Mill Creek before coming to Highway 59 and the unincorporated community of Tennille. After passing through the Tennille community the water would flow into Coffee County. This indicates the need for inter county coordination in the event of dam breach.

As indicated in the description of the Conecuh and Pea River Basins (See Summary of Identified Hazard, Coastal and Riverine Erosion, Landslide and Sinkholes) there is very little drainage basin upstream of Pike County. Based on an examination of area drainage patterns, four impoundments were identified in Bullock County that would flow into Pike county in the event of dam failure. Up stream coordination is therefore required with Bullock County.

There are also existing dams impounding larger volumes of water located in southern Pike County in the vicinity of the Spring Hill community. Spring Hill is approximately three miles south of Troy and six miles east of Brundidge. L and L Lakes are located in rural areas with relatively sparse population. Due to Big and Whitewater Creeks having associated flood plains, the development along those stream channels can be regulated using existing flood hazard protection ordinances and programs. There are no development controls along the tributaries immediately below the respective dams because the county does not possess authority to regulate development outside of flood prone areas. However, development in these areas is not anticipated in the immediate future.

Based on the location of the existing impoundments in the drainage basins there is limited exposure to impacts resulting from dam failures. There is no need to make major changes in land use and development patterns. However, when development is proposed near a waterway the development review process should limit the construction of buildings to areas outside the floodplain and floodway to limit potential property losses in the event of a dam failure.

(ii) Buildings, Infrastructure and Cultural Facilities

As determined in the above section, impoundments in Pike County tend to be located on streams that flow away from the existing municipalities. Therefore a dam failure would not directly impact concentrated urban population and housing. In addition, Pike County and the municipalities have implemented flood hazard protection ordinances. As indicated in the section on flood hazard, there are no inhabited buildings in the flood zone. This would also minimize structural damage and property loss in the event of dam failure. Information reporting population and housing units by various sub areas of Pike County is therefore considered unnecessary.

Bridges crossing drainage ways and drainage works downstream of impoundments would most likely be impacted by water flows from a breached dam. This is similar to the situation described in the flood hazard section. Examples of the types of impacts that could be expected are presented below using L and L Lakes south of Troy as an examples.

In the event that the L and L Lake east of Highway 167 fails, then the water would flow in a tributary which outfalls to Walnut Creek just upstream of the confluence with Whitewater Creek. The lake is approximately two miles from Walnut Creek and slightly over one-half mile to Whitewater Creek. The area along both stream channels is uninhabited.

In the event that the L and L Lake west of Highway 167 fails, then the water would flow in a tributary which outfalls to Big Creek. The lake is approximately one-half mile from Big Creek and the area along the stream channel is uninhabited.

Both Big and Whitewater Creek flow through uninhabited areas after the confluence of the respective tributaries and have associated flood plains. The most significant impact would occur at the bridges where Whitewater and Big Creek intersect County Road 6. For additional information regarding the loss of bridge infrastructure refer to the flood hazard section.

Future dam construction will have to be evaluated as new dams or levees are constructed. However, it is again pointed out that Alabama lacks dam safety legislation so control of future impoundments would be limited.

(iii) Estimate of Dollar Loss

There is no historic loss data reported that can be used as a basis for projecting future losses. The National Climatic Data Center (NCDC) tabulations do not report any losses due to dam or levee failure. Neither the National Dam Inventory by the U. S. Army Corps of Engineers nor the update performed by the National Resource Conservation Service noted any losses due to dam failures.

Population and Housing Vulnerable to Dam or Levee Failure
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Total Housing***
Banks Josie CCD	*2,165*	*853*
Banks	224	92
Balance of CCD	1,941	761
Brundidge CCD	*4,414*	*1,894*
City of Brundidge	2,341	1,014
Balance of CCD	2,073	880
Goshen Shady Grove CCD	*2,279*	*941*
Town of Goshen	300	138
Balance of CCD	1,979	803
Henderson Spring Hill CCD	*3,002*	*1,191*
City of Troy (part)	171	75
Balance of CCD	2,831	1,116
Needmore CCD	*1,771*	*708*
City of Troy (part)	385	147
Balance of CCD	1,386	561
Troy CCD	*15,974*	*6,346*
City of Troy (part)	13,379	5,361
Balance of CCD	2,595	985
City of Troy total	13,935	5,583
Pike County	*29,605*	*11,933*
Urban – Very Low probability	16,500	6,689
Urban – Low probability	300	138
Rural - Low probability	12,805	5,109

Note: Shaded means very low probability due to streams draining away from municipal corporate limits.

Source: U. S. Census Bureau

Hazard: Earthquake

1. Summary of the Identified Hazard

An earthquake is the sudden and sometimes violent movement of the earth's surface caused by the release of energy in the earth's crust or mantle. Because the crust of the earth is rigid, when stress or pressure exceeds the strength of the crust material (typically rock), the crust breaks along a fault line and snaps into a new position. This movement causes vibrations called seismic waves that travel through the earth and along the surface. The seismic waves cause the ground motion that is felt as an earthquake.

The point at which the earthquake rupture begins is usually deep, sometimes up to 500 miles, within the crust and mantle of the earth on a fault line. This point is considered to be the *focus* or *hypocenter* of the earthquake. The point on the earth's surface directly above the focus is the *epicenter*. This is where the movement is most readily felt. As the seismic waves move outward from the focus and epicenter the movement of the ground is diminished as energy is dissipated.

Earthquake *magnitude* is a term used to measure the energy released by measuring the amplitude of ground motion with a seismograph. This measurement is given on the "Richter Scale" which uses a rating scale from one to ten. The Richter Scale is the measure that most people associate with the severity of an earthquake. Earthquake intensity is a description of the severity of the shaking at one location based on reports and observations of people in the affected area. Intensity is expressed using the "Modified Mercalli Scale".

Earthquakes in the eastern United States, including Alabama, are less spectacular than earthquakes occurring along the west coast of the continental United States. Earthquakes in Alabama are usually located in either the New Madrid Seismic Zone (NMSZ) or the Southern Appalachian Seismic Zone (SASZ). According to the U. S. Geological Survey, large earthquakes in either of these two seismic zones have the potential to affect the northern half of Alabama. The SASZ extends from Roanoke, Virginia in a southwesterly direction, to central Alabama following the Appalachian Mountains and is the zone in closest proximity to Pike County.

Geologic records indicate that the fault lines where earthquakes could occur are more than 40 miles away from Pike County. (See Illustration 12) Historical records (1886 through 1998) document 118 earthquakes in Alabama. Although an earthquake can occur anywhere in Alabama the attached map indicates that the historic pattern of epicenters has always been outside southeast Alabama and Pike County. (See Illustration 13) Severe earthquakes, such as the August 13, 1886 event centered on Charleston, South Carolina, was felt for up to 750 miles away and damage was reported in portions of Alabama. However, according to the U. S. Geological Survey, earthquakes occurring in Alabama are not likely to do serious damage.

Illustration 12:

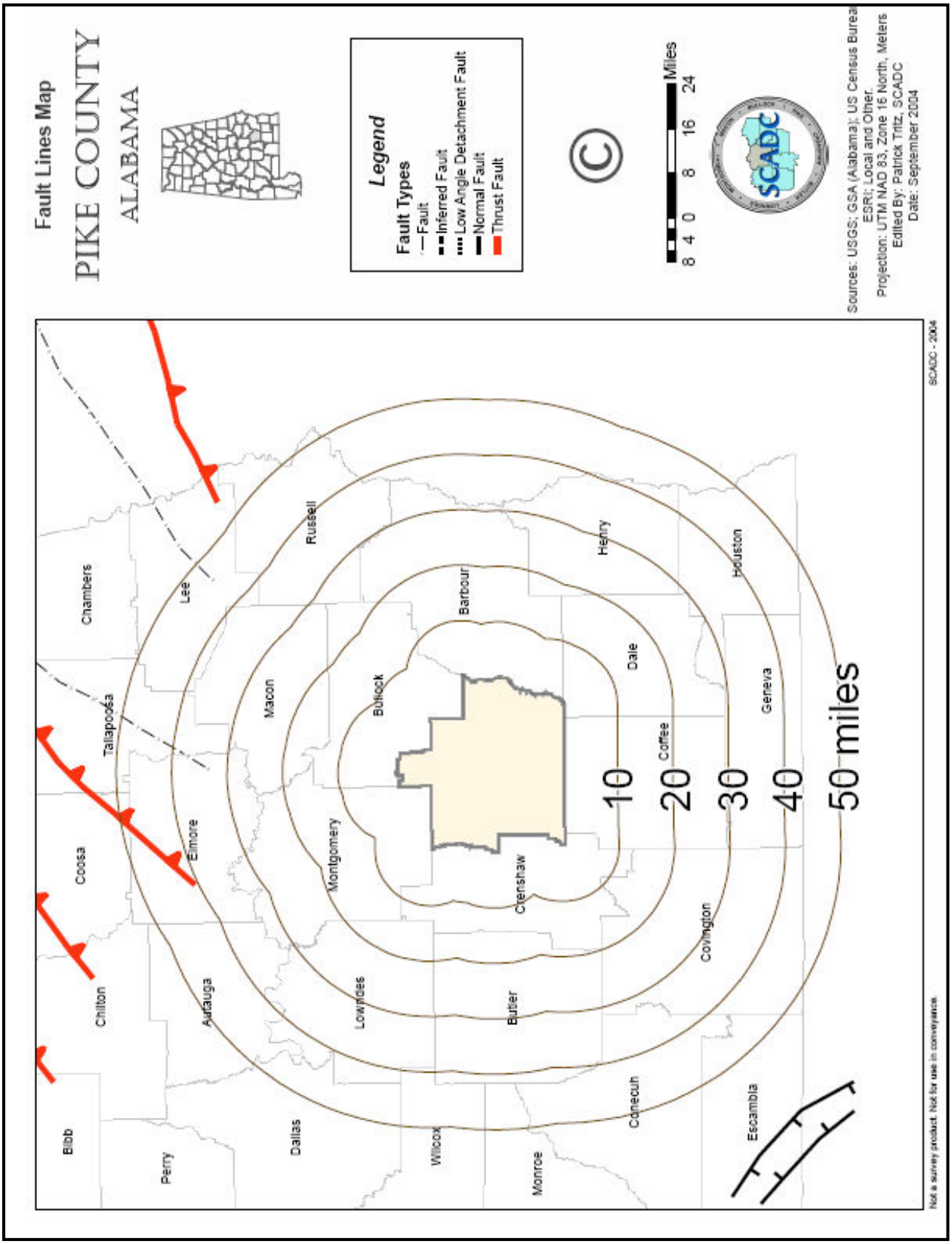
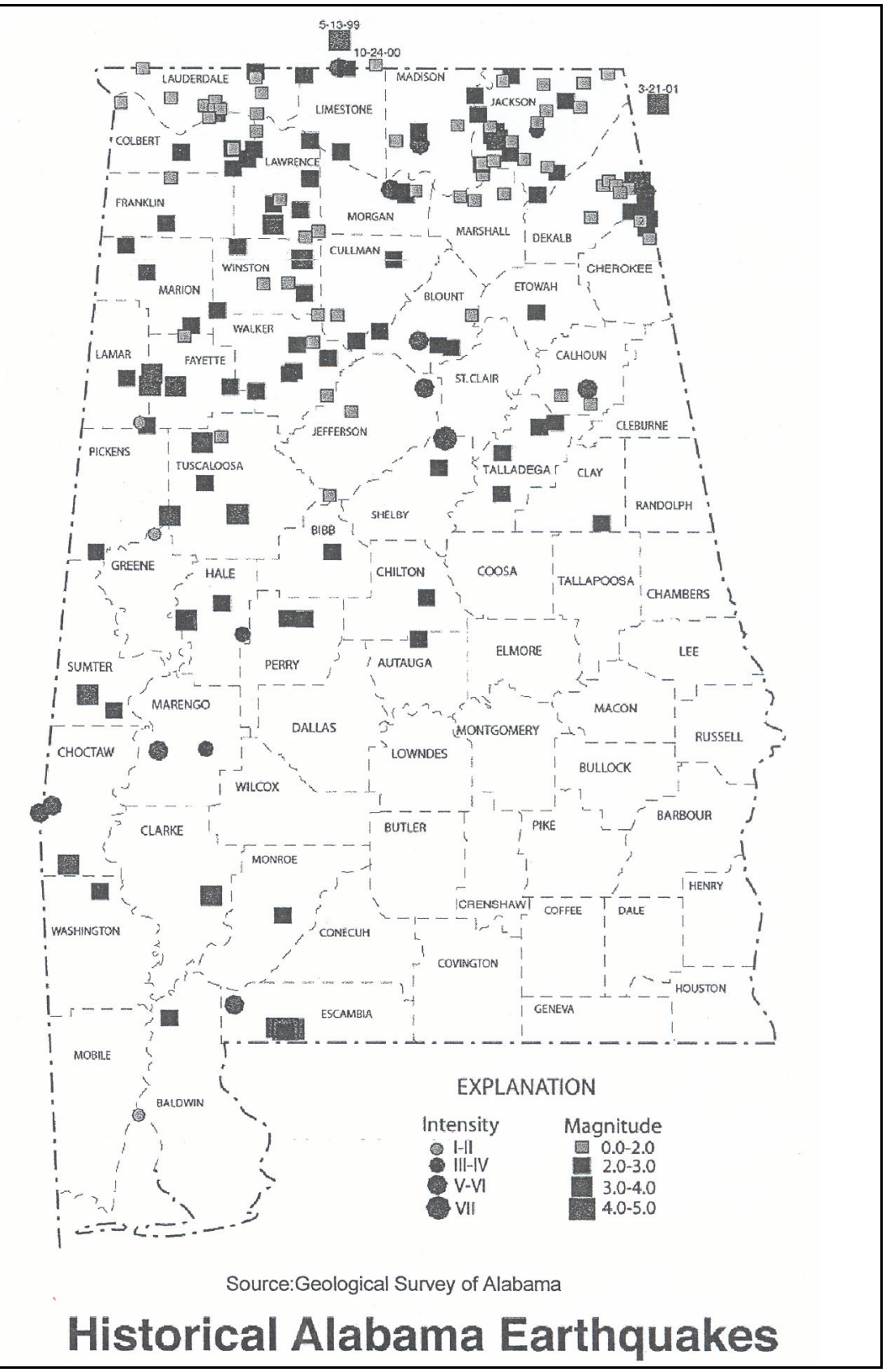


Illustration 13:



Source:Geological Survey of Alabama

Historical Alabama Earthquakes

2. Description of Risk
(i) Prior Occurrences

During the 113 year period, no earthquake epicenters have been located within the boundaries of Pike County. Earthquake tremors, slight shaking, have been felt in Pike County when earthquakes occur elsewhere in Alabama. Since 1886 through 1998 the closest earthquake epicenters have been approximately 60 to 85 miles away. (central Pike County to northern Autauga County – 61.5 miles; central Pike County to eastern Monroe County – 78 miles; and central Pike County to central Escambia County – 85 miles) These earthquakes have measured between 2 and 3 on the Richter Scale. This represents the energy equivalent of a bomb blast that could partially damage a large structure or a large lightening bolt. However, since the epicenters are distant, this range of magnitude from an earthquake is rarely felt by humans in Pike County.

(ii) Future Probability

It is felt that there is a low probability of an earthquake epicenter occurring in Pike County or the four municipalities in the future. In contrast, seismic waves may be experienced at any location in Pike County, but it is unlikely that severe damage would occur.

(iii) Location and Extent

Based on the historical data from the U. S. Geological Survey and the Geologic Survey of Alabama the probability of any area in Pike County experiencing the epicenter of an earthquake is deemed to be very low. However, the entire county, including all four municipalities, are located in an area of Alabama that is subject to experiencing minor seismic waves related to an earthquake occurring elsewhere in Alabama. Most of the time the seismic tremors are so small that they are not detected by humans. If the seismic tremors are stronger, at worst, they are expected to cause minor damage. The table "Population and Housing Vulnerable to Minor Earthquake Tremors" documents the 2000 population and housing unit count in Pike County and related sub areas including County Census Divisions and municipalities.

3. Community Vulnerability to Impact
(i) Land Use and Development Trends

Since earthquakes rarely occur in the southeastern United States local building codes do not usually include seismic design criteria. The amount of energy released by an earthquake is only one factor. Two other factors influencing structural damage are the building foundation and height. Structures that are built on solid foundations, as opposed to loose sediments near stream beds and filled areas, withstand earthquakes much better. In addition, the height of a structure, which magnifies the shaking movement at the base, should also be considered. These factors do not require modifying land use and development trends, but should be considered in locating and designing structures on sites within Pike County and the four municipalities.

(ii) Building, Infrastructure and Cultural Facilities

All buildings and facilities located in Pike County are potentially subject to experiencing low magnitude seismic waves that are typically hardly felt by humans and do little to no structural damage. See table "Population and Housing Vulnerable to Minor Earthquake Tremors" that provides an estimate of population and housing in Pike County that potentially could be impacted by minor earthquake tremors.

Population and Housing Vulnerable
To Minor Earthquake Tremors
Pike County, Alabama and Selected Sub Areas, 2000

Area	***Total Population***	***Total Housing***
Banks Josie CCD	*2,165*	*853*
Banks	224	92
Balance of CCD	1,941	761
Brundidge CCD	*4,414*	*1,894*
City of Brundidge	2,341	1,014
Balance of CCD	2,073	880
Goshen Shady Grove CCD	*2,279*	*941*
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Henderson Spring Hill CCD	*3,002*	*1,191*
City of Troy (part)	171	75
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Needmore CCD	*1,771*	*708*
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Troy CCD	*15,974*	*6,346*
City of Troy (part)	13,379	5,361
Balance of CCD	2,595	985
City of Troy total	13,935	5,583
Pike County	*29,605*	*11,933*

Source: U. S. Census Bureau

(ii) Estimate of Dollar Loss

The National Climatic Data Center tabulations do not indicate any losses occurring in Pike County due to earthquakes.

Mitigation Strategy

Introduction

This section of this report presents the mitigation strategy for addressing the impacts of natural hazards in the municipalities of Banks, Brundidge, Goshen, Troy and Pike County, Alabama. The mitigation actions are intended as a blueprint for reducing potential losses in the event of a natural disaster. The mitigation strategy presents activities for each category of natural disaster included in the risk / vulnerability assessment. Besides the activities included in each natural hazard category additional mitigation activities are proposed as an administrative mitigation strategy. The elements of the administrative strategy are intended to improve mitigation planning, activities and implementation.

Mitigation Strategy Format

The organization of each mitigation strategy is based on the federal requirements of section 201.6(c)(3). Each mitigation strategy is presented using the following format.

Natural Hazard Category

Relation to Risk Assessment
Existing Programs and Policies
Mitigation Goal
Mitigation Activities
- *(i) Activity*
- *(ii) Priority and Timeline*
- *(iii) Implementation Authority*
- *(iv) Resources Needed*

Action Plan

The mitigation strategy presentation is followed by an action plan. The action plan summarizes the activities identified in the mitigation strategies and supplies additional information regarding: 1) the phase each activity addresses; 2) classifies the activities into categories; 3) identifies the jurisdiction each activity is related to; 4) identifies the entities responsible for implementation; 5) establishes a relative priority for each activity; and 6) estimates the amount and source of budget resources required, allocates annual costs and schedules the year in which the activity is proposed for accomplishment.

1. Activity Phase

The phase identifies whether the activity is closest related to: 1) pre-planning for a natural disaster; 2) advance preparation to decrease or eliminate loss; 3) responding to the immediate post disaster situation; or 4) recovery from the impacts of the disaster event.

2. Activity Category

The various activities are categorized into groupings such as : 1) administration; 2) education and awareness; 3) research; 4) mitigation planning; and 5) technical assistance.

3. Jurisdiction

The association of each activity to a local government jurisdiction responds to the federal requirements of section 206.1(c)(3)(iv) and generally identifies the area benefiting from the activity. The applicable jurisdictions are Pike County, the Town of Banks, City of Brundidge; Town of Goshen, the City of Troy and "all" means that every local governmental jurisdiction will benefit.

4. Responsibility

This item identifies the agency, organization or governmental unit responsible for implementing the identified activity.

5. Relative Priority

The relative priority establishes the importance of each mitigation activity. Each activity was prioritized as having a high, medium or low priority. The assignment of a priority for each activity included in the final plan was based on reviews conducted by the Local Emergency Planning Council and the Director of the Pike County Emergency Management Agency. Historic loss data, including loss of life, injury and property and crop damage reported for each natural hazard was a primary consideration. The evaluation and prioritization is directly related to cost benefit analysis. For example, the natural hazards that were identified as most likely to impact Pike County and the four municipalities were: a) Thunderstorms (including lightening) and Tornadoes; and b) Hurricanes and Coastal Storms. Collectively, according to the National Climate Data Center reports these two categories of natural hazards account for: two (2) deaths; twelve (12) injuries; $4,467,000 in property loss; and crop damage of $47,000. The above data does not include an estimated $6,000,000 in loss and clean-up expenses incurred after Hurricane Ivan in September, 2005. As such the local prioritization is heavily based on cost benefit analysis.

In addition, mitigation projects will only be implemented when the benefits are maximized and outweigh the associated costs of the proposed activity or project. The Local Emergency Planning Council performed a general evaluation of each mitigation activity, including those which might require FEMA funds, and established the relative priority rating presented in this report. The Council weighed the estimated cost of each mitigation activity against the estimated benefits that could be derived by undertaking the activity. For example, a project to install additional warning sirens would notify the vulnerable population to take protective measures to prevent the loss of life. A more detailed benefit-cost analysis will be required for each activity to determine it's respective economic feasibility during the project planning phase.. Mitigation activities and projects will also require a more detailed evaluation of eligibility and feasibility including factors such as social and environmental impact, technical feasibility and other criteria that measure project effectiveness. The detailed evaluation of activities and projects will be performed during the pre-application phase of a grant request.

Since the fiscal capability of local jurisdictions are limited and the mitigation plan is to reflect local capability and capacity it is possible that certain activities may have to be scheduled over a series of years. Certain activity and project implementation will be subject to the availability of assistance, such as FEMA grants, and other sources of funds including local

budgeting from year-to-year. In some cases it may be necessary to defer an activity until other agencies or departments complete work that will be used to perform the local activity.

6. Budget Information

A series of information is provided related to activity and project cost.

Total Cost – The total cost reflects the estimated outlay to complete a local activity or project. It is possible that the total cost may exceed the annual amounts scheduled over the first five years of implementation.

Annual Outlay – The annual outlay may complete a single activity of project or reflect an annual increment of a long term program. By distributing total cost over annual increments the capacity and capability of local jurisdictions is reflected.

Implementation Schedule – A timeline is created by assigning each activity or project to be implemented to a future year. It is realized that the proposed timeline will have to be monitored by the Local Emergency Planning Council and the Pike County Emergency Management Agency to reflect changes in priority and availability of funding.

Administrative Mitigation Strategy
Mutual Aid Compact

Relation to Risk Assessment

Pike County is a participating member in a 23 county mutual aid compact that has been established in southeast Alabama.

Existing Programs and Policies

Through this mutual aid compact Pike County has access to additional manpower, equipment and support from the other member counties to mitigate emergencies. Likewise, Pike County may be called upon to assist one of the other county members with their emergency.

Mitigation Goal

- To sustain membership, benefits and services as enabled by the existing mutual aid compact.

Mitigation Activities

(i) Activities

1. The Pike County Emergency Management Agency will be responsible for maintaining membership in the mutual aid compact and serving as the local point of contact to administer Pike County participation in the compact.

2. Review the legal basis of the existing mutual aid compact to ensure that loaning / borrowing equipment and payment for supplies and services can be properly executed and transacted under the Code of Alabama and any related regulations.

(ii) Priority and Timeline

This is a current, on-going activity that will be sustained on an annual basis as a part of operation of the Pike County Emergency Management Agency.

(iii) Implementation Authority

This is considered to be an on-going, administrative function of the Pike County Emergency Management Agency. Additional research will be performed to ensure that the legal basis of the compact is sufficient for mutual use of equipment and manpower and to permit intergovernmental payments as necessary.

(iv) Resources Needed

Existing resources are in place to implement this activity. The Director of the Emergency Management Agency can continue as the point of contact for the mutual aid compact. The EMA Director will have to request that the County Commission task the County Attorney to review the legal ramifications of the mutual aid compact regarding loaning and borrowing equipment and paying or reimbursing other members for assistance provided.

Administrative Mitigation Strategy
Database

Relation to Risk Assessment

As a result of preparing the risk assessment it was determined that there is a disparity in the data available regarding past occurrences and impacts of natural hazards. A significant difference also exists regarding the historic period for which data is available for the same or different types of natural hazard. For example, the NCDC data for wildfires is for a 54 year period. In comparison, the Alabama Forestry Commission data covers a nine year period. Also missing data, such as the location of a disaster event, diminishes the ability to reasonably portray the impact of events in the risk assessment.

Existing Programs and Policies

There is no local program to track natural hazard events and compile a local database. Data is currently being collected and cataloged by external federal and state agencies. There is no mechanism in place to regularly transmit the data gathered to local entities.

Mitigation Goal

- To create a local natural hazard database that is based on federal and state data, subject to review and modification at the local level to more accurately portray events, impacts and losses.

Mitigation Activities

(i) Activities

1. The Pike County Emergency Management Agency will be responsible for gathering data and determining what corrections and additions need to be made to accurately reflect local hazard events.

2. To facilitate the transfer of data between various agencies the Pike County Emergency Management Office will attempt to establish informal contacts to request data. In the event an external organization requires more formal arrangements the Pike County EMA will considered an Memorandum of Understanding between the respective organizations.

(ii) Priority and Timeline

This activity that will enhance future risk assessments, mitigation planning and response and recovery actions. The Pike County Emergency Management Agency will use the natural hazard event information included in the current hazard mitigation plan and continue to add data to the local database as future events occur.

(iii) Implementation Authority

This is considered to be an on-going, administrative function of the Pike County Emergency Management Agency. No additional authority is required.

(iv) Resources Needed

The South Central Alabama Development Commission and the Pike County Emergency Management Agency can transfer the natural hazard data gathered for the "Multi Jurisdictional Hazard Mitigation Plan" to initiate the local database. The Pike County EMA will need to determine the format that the data will be stored in for future use. Assistance may be required to construct the local database in a format compatible with existing computer equipment.

The Pike County EMA can establish contacts with the various agencies to secure future data as it becomes available at state and federal agencies. An initial step would be to create a schedule reflecting when updated information is available. In this manner the frequency of up dating and data transfer can be determined It will also assess the timeliness and coverage of available data.

Administrative Mitigation Strategy
Hazard Mitigation Plan Maintenance

Relation to Risk Assessment

This activity is related to the prior strategy to establish a local database regarding the occurrence, impacts and losses related to natural hazards. This activity would also use the database to update the "Multi Jurisdictional Hazard Mitigation Plan" as necessary. This activity is related to the plan maintenance and update discussed in the last part of this document. (See the last chapter, "Plan Maintenance Process".) It is also anticipated that this plan will be expanded in the future to include all hazards.

Existing Programs and Policies

The "Multi Jurisdictional Hazard Mitigation Plan for Pike County, Alabama and the Municipalities of Banks, Brundidge, Goshen and Troy" is a new plan. The intent of the federal requirements is clearly to maintain an up to date, active plan and ongoing planning process. The Pike County Emergency Management Agency needs to work with all local jurisdictions and coordinate with other planning programs to maintain this plan. Procedures to maintain this plan are described in the next chapter.

Mitigation Goal

- To maintain the "Multi Jurisdictional Hazard Mitigation Plan" as a viable program to minimize property and personal loss in Pike County and all municipalities.

Mitigation Activities

(i) Activities

1. To maintain the "Multi Jurisdictional Hazard Mitigation Plan" in accordance with the procedures described in the chapter titled "Plan Maintenance Process",

2. To review, on a regular basis, the risk and vulnerability assessment as new or expanded data is collected for the local database. (See prior mitigation strategy for "Database".)

3. To have the Pike County Local Emergency Planning Council conduct regularly scheduled reviews of the plan.

4. To review the status of related programs and determine if they are currently active or when the next update is anticipated.

(ii) Priority and Timeline

This activity is an ongoing process to be directed by the Pike County Emergency Management Agency. Cooperation with other planning programs for the four municipalities and Pike County is necessary during the periods when these planning programs are active.

(iii) Implementation Authority

Authority to maintain the "Multi Jurisdictional Hazard Mitigation Plan" already exists. No additional authority is required.

(iv) Resources Needed

The procedures and participants required to maintain the "Multi Jurisdictional Hazard Mitigation Plan" are identified in the last chapter of this document. Most of these activities were considered to be ongoing functions related to the Pike County Emergency Management Agency. Likewise, coordination with, but limited participation in, other planning programs was considered to be ongoing functions related to the Pike County Emergency Management Agency.

The integration of the database and updating of the risk and vulnerability assessment will require additional support. This is necessary due to needing access to additional data that must be gathered. This includes information on growth and development trends, decennial census data and interim estimates and the ability to integrate this data for analysis using tools such as a geographic information system (GIS).

Likewise, information from related planning programs can be coordinated locally, but assistance will be required to integrate data into the "Multi Jurisdictional Hazard Mitigation Plan". When external expertise is required, such as assistance from federal and state agencies, the ability to integrate their information is beyond the current technical capability of Pike County EMA. Finally, assistance will be required to physically produce graphics and related data to be included in plan updates.

Administrative Mitigation Strategy
Local Merchant Supply Network

Relation to Risk Assessment

Response to and recovery from natural hazard events such as flood, tornadoes and severe thunderstorms require tools and supplies during the response period and supplies for repairs and rebuilding during the recovery period. Frequently first responders and local citizens do not know where to find the needed equipment and supplies.

Existing Programs and Policies

The supplies and equipment available through the 23 county mutual aid compact focuses on existing emergency equipment in each of the member counties. No existing programs was identified that catalogued supplies and equipment available from Pike County merchants. The purpose of the proposed program is to enable first responders to locate needed equipment and supplies at the nearest location. Citizens will also be able to use the system to locate supplies they need for repairs after a hazard event. The latter aspects of the program are similar to a "shop and support your local merchant" program.

Mitigation Goal

- To create an database and network that enables local merchants to itemize the equipment and supplies that they have available.

(i) Activity

Establish a shared database where merchants can post identified equipment and material that is locally available. The logistic needs, such as equipment and supplies (e.g. software), to establish the database and network of local businesses should be fully studied and planned. Therefore, the initial step for this proposal is a feasibility study that includes the design of the network and procedures.

(ii) Priority and Timeline

This proposed project requires a long-term timeframe due to the complexity of the proposed network and the expected cost to make the system operational.

(iii) Implementation Authority

No additional authority is required. The Pike County Emergency Management Agency can begin the development of the network on a strictly voluntary basis.

(iv) Resources Needed

The first step is to assemble a list of businesses in the Pike County, including the municipalities, and select those establishments that would typically handle the supplies and equipment required. The County and City business license records can be used for this purpose. Each year the business licenses should be reviewed to maintain an up to date list of businesses.

The second step is to contact those businesses and determine if the proprietors are willing to participate in the network and whether the business really handles the type of supplies and equipment required. Once this is determined a second survey of the business would enable the proprietor to itemize the materials that are usually available.

The third step would be to establish a uniform procedure to price that material and equipment that might be required. Associated with determining the price, a process for routine price up dating will also be required. This may require annual or biannual price surveys.

The last step would be to construct a database identify the businesses, equipment and supplies available, location and a contact person. After the database is constructed it will have to be updated on a regular basis. As noted in step one, the business licenses will need to be reviewed to determine that businesses are still open and to identify new businesses that have located in the area that might potentially participate in the network. As noted in step three, the prices of supplies and equipment will also need to be updated frequently.

It is expected that this work will be conducted by the Pike County Emergency Management Agency in cooperation with license clerks from each city and the county. Outside technical support will be required to construct the database to operate the network. Once the initial database is constructed the Pike County EMA can maintain the system.

Administrative Mitigation Strategy
Contractor Licensing

Relation to Risk Assessment

Recovery from natural hazard events such as flood, tornadoes and severe thunderstorms often attracts an infusion of non-local contractors.

Existing Programs and Policies

Business licensing programs already exist and the municipalities of Brundidge and Troy and Pike County employ license inspectors. The purpose of the proposed enforcement program is two fold. First, it provides the local officials with an opportunity to obtain information about non-local contractors that will be working in their community for a limited period of time. Second, it equalizes the costs incurred by all contractors and builders since local firms have already acquired a local business license.

Mitigation Goal

- To educate citizens that Alabama laws exist to prevent contractor price gouging,
- To require all outside contractors to obtain the necessary business licenses to operate in Pike County and its municipalities following the occurrence of a natural hazard event.

(i) Activity

Prior to the occurrence of another natural disaster the Pike County Emergency Management Agency should secure data regarding the state law and inform citizens regarding their rights and responsibilities during an emergency. This will provide citizens with access to a consumer protection hotline to report violations to the Alabama Attorney Generals office.

Following a natural hazard event the county and municipalities need to post signs notifying all contractors that local business licenses must be acquired prior to working in the community. Monitoring by building or other local officials should stop violators by issuing stop work orders until the proper licenses are acquired.

(ii) Priority and Timeline

The education component of this strategy should be initiated as soon as practical. Once the information is gathered the means to distribute the information must be determined. It is suggested that contacts with local news media be used immediately following an emergency to remind citizens.

This project is only applicable during the response and recovery time immediately following a natural disaster. Licensing enforcement procedures need to be put in place by each governmental jurisdiction prior to the occurrence of the next hazard event. This is not expected to be a problem for those municipalities with license inspectors. A cooperative arrangement may need to be implemented between Pike County and those municipalities that do not have license inspectors.

(iii) Implementation Authority

Business licensing by cities and counties is already authorized by the Code of Alabama. In addition, the citizen information activities can also be undertaken under existing authority. No additional authority is required.

(iv) Resources Needed

All of the manpower resources to operate this program are assumed to be currently available in the respective municipalities and county. A method to initially distribute information to citizens needs to be researched and contacts need to be made with local media outlets regarding future notices in the event of a natural hazard.

Mitigation Strategy for Severe Thunderstorms / Tornadoes

Relation to Risk Assessment

The risk assessment determined that there were 109 events under this category. High winds were a factor in all 26 tornadoes and 56 of the thunderstorms. Hail accompanied 27 of the thunderstorms. Property and crop damage were reported as a result of these storms.

The location and track of the storms were insufficiently recorded in the NCDC data. Therefore, it must be assumed that the storms occur at locations throughout Pike County and that mitigation activities apply to all four municipalities and the county.

Existing Programs and Policies

Pike County has a severe weather warning siren system that does not cover the entire county.

Mitigation Goal

- To expand the coverage of the storm warning system to the entire geographic area of Pike County.

- To increase the durability of buildings and improve the safety of residents to protect them during severe storm events.

Mitigation Activities

(i) Activities

1. Expand the warning siren network. - The existing siren network covers heavily populated areas. Sirens are located at all schools in Pike County and believed to be within hearing distance of hospitals and nursing homes.

2. Assess highly populated facilities - To conduct an assessment of highly populated facilities (schools, nursing homes, hospital) to determine how the facility can be improved to withstand severe storms.

3. Promote the construction of safe rooms in new residences - To date only six safe rooms have been constructed in Pike County.

(ii) Priority and Timeline

The proposed activities cover a broad spectrum on the timeframe. For example, it has already been determined that seven additional sirens are needed and their respective locations are known. Funding must then be secured to purchase and install each siren.

Community storm shelters are desired in each of the four municipalities; Banks, Brundidge, Goshen and Troy. These facilities will provide shelter for the most densely populated portions of Pike County. Therefore, large numbers of residents can access the shelters with a minimal amount of travel time.

Safe rooms in residential construction can be promoted on a continuous basis. The number actually installed is expected to be lower than the number of housing units built due to increasing the construction cost of the home. Individual safe rooms will be encouraged for all new residential construction.

Finally, the study of high density facilities will have to be performed by a qualified professional in order to determine the structural feasibility of modifications to protect the facility and the estimated cost of suggested improvements.

(iii) Implementation Authority

Adequate authority and mechanisms already exist for installing the warning siren system. In contrast, local building codes can only regulate the type of construction proposed. Building codes can not require the construction of safe rooms in houses. Finally, the retrofitting of existing structures can not be required and the cost may be so exorbitant that the owners will decline to participate.

(iv) Resources Needed

Significant amounts of assistance are required to complete the capital improvement projects and to fund technical assistance activities identified to mitigate this natural hazard. This includes capital funding assistance for the warning siren system, community shelters and the individual safe rooms. Funding for professional technical assistance to assess the status of public buildings is also required.

Mitigation Strategy for Hurricane and Coastal Storms

Relation to Risk Assessment

The risk assessment determined that the effects of Hurricane Opal were felt in Pike County on October 4, 1995. The remnants of Opal produced high winds and rain similar to severe thunderstorms and tornadoes. The procedures applicable to those types of natural hazards can be applied to address future situations where remnants of a hurricane move inland as far as Pike County.

Existing Programs and Policies

See Severe Thunderstorms / Tornadoes

Mitigation Goal

See Severe Thunderstorms / Tornadoes

Mitigation Activities

(i) Activity

See Severe Thunderstorms / Tornadoes

(ii) Priority and Timeline

See Severe Thunderstorms / Tornadoes

(iii) Implementation Authority

See Severe Thunderstorms / Tornadoes

(iv) Resources Needed

See Severe Thunderstorms / Tornadoes

Mitigation Strategy for Drought / Heat Wave

Relation to Risk Assessment

The risk assessment determined that the single extreme heat event was based on seasonal fluctuations as opposed to being excessively hot for an extended duration. The NCDC data indicated that, historically, there were no droughts in Pike County. In contrast, the Geological Survey of Alabama data indicated that 13 drought years were experienced during 112 years of record.

Existing Programs and Policies

The risk assessment also determined that the state Office of Water Resources released a draft drought plan for review and comment in September, 2003. Minor revisions have been added to the coordination procedures since the initial release. Under this plan the state will monitor drought conditions and issue notices to cooperating governments and agencies.

Mitigation Goal

- To participate in the state drought management process and disseminate information throughout Pike County as appropriate.

Mitigation Activities

(i) Activities

1. After receiving state notice that drought conditions are indicated, participate in the state drought monitoring and management process.

2. Circulate information regarding the status of the drought to local governments, water boards and other interested authorities, agencies and non-profit organizations.

(ii) Priority and Timeline

There is no established priority for this activity. Actions will be taken when a drought event occurs.

(iii) Implementation Authority

No additional authority is required. The Pike County Emergency Management Agency can participate in the coordination process under its existing administrative authority.

(iv) Resources Needed

State drought planning coordination efforts can be undertaken by the Pike County Emergency Management Agency and local water boards and authorities. Upon obtaining pertinent drought information the Pike County EMA can disseminate data to the water systems.

Cooperation is needed with local media outlets in order to provide citizen notices of extreme heat. Coordination with local senior citizen centers is also required because these agencies support activities such as providing electric fans.

Mitigation Strategy for Winter Storms / Freezes

Relation to Risk Assessment

The risk assessment determined that over the last 54 years that winter storms and extreme cold weather affected the Pike County area about 0.3% of the time. Typically, due to the nature of winter storms affecting large areas, the entire county is impacted simultaneously.

Existing Programs and Policies

There are various programs and policies in place regarding winter storms, snow and freezing weather. First, the National Weather Service issues winter storm warnings through various local media outlets. Schools have operating procedures regarding how they assess weather conditions and determine school closings. Churches and non-profit organizations call local media outlets to have them announce their closings. Other businesses tend to respond to the winter conditions as they occur; sometimes by temporarily closing.

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When advance notice of a winter storm is given, Pike County preloads trucks with sand and parks them in proximity to locations where they are anticipated to be needed to service roads. This preplanned manner of operation enables the County to keep primary transportation arterials open.

Mitigation Goal

- To be prepared to respond to hazardous traffic conditions and have the capability to respond to emergencies during winter storm conditions.

Mitigation Activities

(i) Activities

The following activities are general in nature and can be undertaken by the four municipalities and the county on an individual basis.

1. Prearrange (bid) prices for supplies of sand and ice melting chemicals to be acquired on an as needed basis.

2. Continue to disperse equipment and supplies to pre-designated locations when winter storm warnings are issued.

3. Create a list of publicly owned four wheel drive vehicles that can be used during winter storm conditions. Create an alternative list of four wheel drive vehicles owned by public employees that could be used for reimbursement.

(ii) Priority and Timeline

The necessity to prepare for winter storms is considered to be a low priority. However, the proposed actions are relatively simple. It is therefore recommended that these minor preparations be undertaken on a routine basis.

(iii) Implementation Authority

No additional authority is required from higher levels of government. Each municipality and the county can authorize the bids for materials and the mileage rate for the use of private vehicles in the event they are needed in an emergency.

(iv) Resources Needed

Financial resources will continue to be required to repair minor infrastructure damaged by snow and ice storms; such as downed electrical lines.

Mitigation Strategy for Wildfires

Relation to Risk Assessment

The risk assessment gathered conflicting data regarding wildfires. The NCDC data indicated there were no wildfires in Pike County. The Alabama Forestry Commission reported 177 fires over the past nine years. It was acknowledged that the difference may be due to the definition of what size fire constitutes a wildfire. According to the Alabama Forestry Commission data the average number and size of fires reported in Pike County is increasing.

Existing Programs and Policies

Presently the fire departments respond to brush fires.

Mitigation Goal

- To increase the capability of all local firefighters to fight wildfires.

- To reduce the potential for wildfires.

Mitigation Activities

(i) Activities

1. In order to increase the capability of the local firefighters to fight wildfires the following activities are proposed.
   A. Provide wildfire training for firefighters.
   B. Determine equipment needs to fight wildfires and assess deficiencies by fire department.
   C. Identify water sources and deficiencies for use in fighting wildfires.

2. In order to reduce the potential for wildfires the following activities area proposed.
   A. Identify developments with relatively high volumes of fuel material and schedule "brush clean-up" days. Trash is currently collected by the City of Troy. Pike County contracts for garbage collection and does not have a method to implement trash collection without additional fees.
   B. Reduce or waive tipping fees at the landfill during designated clean-up periods.

3. Create information / education brochures for residents advising them regarding the reduction of fuel loads near their homes.

4. Create citizen awareness and locally emphasize the state's public notices restricting burning during dry periods.

(ii) Priority and Timeline

It is proposed that the actions related to firefighters be considered moderate term in order to allow time for coordination with several fire fighting units. The proposed activities related to clearing of flammable material to reduce the available fuel load should be ready for implementation during the summer of 2005.

(iii) Implementation Authority

The authority to perform these types of tasks already exist.

(iv) Resources Needed

To date no wildfire damage has been reported at the federal level, but an increasing number of larger sized fires are reported at the state level. In order to suppress this trend funding is required for local training and equipment to rapidly extinguish brush and wildfires before they become major catastrophes.

Citizen education and information is also important to making residents of Pike County aware of fires hazards in developed areas. Cooperation is required between state and local personnel so that citizens can be informed of potentially hazardous dry periods. Cooperation is also required with local media outlets so that information regarding hazardous burning conditions can be widely distributed.

Mitigation Strategy for Floods

Relation to Risk Assessment

The risk assessment determined that there were three flash flood events having countywide impact in Pike County. Examination of local flood insurance maps also indicated that riparian flood plains exist along streams and rivers throughout Pike County and portions of the four existing municipalities.

Existing Programs and Policies

Local municipalities and PikeCounty implement the National Flood Insurance Program (NFIP). A county bridge inventory, including data on existing bridges in Pike County, exists but needs updating.

Mitigation Goal

- To prevent and reduce future flood losses by limiting development in flood prone areas and protecting or relocating existing facilities that are located in flood prone areas.

- To reduce the volume of runoff generated by development in order to avoid increasing the extent or depth of flooding.

Mitigation Activities

(i) Activity

1. To continue local implementation of the NFIP and enforcement of local ordinances adopted to prevent flood damage.

2. To modify existing municipal zoning ordinances to control the amount of impervious surface allowed on each lot in every zoning district.

3. To amend local subdivision regulations to limit the volume and velocity of water flow from developments and encourage the use of retention ponds.

4. Update the county bridge inventory.

5. Secure updated digitized flood maps from Office of Water Resources and verify development in or clear floodway

(ii) Priority and Timeline

The implementation of the NFIP is already in progress. This program needs to be on-going with strict enforcement.

The activities proposing changes to local land use regulations (zoning ordinances and subdivision regulations) primarily focus on the four municipalities. The changes are small to moderate in scope and suggested language can be prepared for all four municipalities within nine months. Adoption by the municipalities would then follow the presentation of the proposed language.

(iii) Implementation Authority

Adequate authority exists for the continued implementation of the NFIP. Other recommended changes in local land use regulations are applicable to the municipalities, but leave a large portion of the unincorporated area without similar programs. Without additional state enabling legislation for county zoning and an expanded scope for county subdivision regulations the County cannot take further action.

No additional authority is required to update the bridge inventory.

(iv) Resources Needed

The Alabama Office of Water Resources (OWR) is in the process of updating and digitizing flood maps. Once this information is available from OWR the flood areas should be overlaid on recent aerial photographs of Pike County to determine potential problems that exist in the flood prone area. Once this desktop analysis is complete the information must be verified by local observation. During the two stage analysis any potential problems can be cataloged in a database and potential solutions recommended.

Resources will be required to acquire the necessary information and to conduct the desktop analysis. Additional resources are projected to be needed for local verification. The completed analysis may identify a broader range of needs based on the problems discovered during the updated survey.

Mitigation Strategy for Erosion, Landslides and Sinkholes

Relation to Risk Assessment

The risk assessment determined that the southern portion of Pike County has geologic conditions that are compatible with the development of sinkholes and subsidence. However, no active sinkhole or subsidence activity was identified.

The risk assessment determined that Pike County is not an area considered to be susceptible to landslides.

The risk assessment determined that "natural process" riverine and stream erosion will occur in a manner similar to any waterway in a natural stream bank. Activities to prevent the acceleration of natural stream bank erosion should be encouraged.

Existing Programs and Policies

Other federal and state agencies currently monitor the geologic conditions and occurrences such as sinkholes, subsidence and landslides. Federal (Natural Resource Conservation Service) and state (Soil and Water Conservation Committee) agencies are available to provide technical information regarding stream and river bank erosion. None of these issues are addressed at the local level.

Mitigation Goals

- To coordinate with the appropriate federal and state agencies regarding geologic conditions in Pike County regarding the future potential for sinkhole, subsidence and landslide occurrence.

- To work with federal and state agencies to create awareness and voluntary action programs to minimize man-made interventions that would increase stream and river bank erosion.

Mitigation Activities

(i) Activities

1. Contact the U. S. Geological Survey and the Geological Survey of Alabama regarding additional information on sinkholes, subsidence and landslides in Pike County.

2. Contact the Natural Resources Conservation Service regarding specific soil conditions in Pike County that could be susceptible to accelerated stream and river bank erosion.

3. Work with the local Soil and Water Conservation Committee to establish programs to create local awareness regarding the prevention of stream and river bank erosion and to promote voluntary programs to preserve and protect areas adjacent to waterways.

(ii) Priority and Timeline

Initial contact with the respective federal and state agencies can be initiated in the short term. Based on their expertise the necessity to conduct further examinations may be eliminated

in the short term. If additional investigations are necessary, then the availability of resources at the federal agency may become a limiting factor requiring a longer time frame to obtain a response.

(iii) Implementation Authority

The coordination activities can be under taken as a part of the regular administrative duties of the Pike County Emergency Management Agency. No additional authority is required.

(iv) Resources Needed

Until the initial contact is made and a short term evaluation rendered the full determination of the type and extent of resources required can not be determined.

Mitigation Strategy for Dam or Levee Failure

Relation to Risk Assessment

The risk assessment determined that the use of large water impoundments would be impractical in northern portions of Pike County due to being located in the headwater area of the Pea and Conecuh River basins. Currently there is no state authority or program to address dam and levee safety.

Existing Programs and Policies

No applicable programs were identified. There are federal agencies, such as Natural Resources Conservation Service and the U. S. Army Corps of Engineers that can provide technical assistance regarding dams and levees.

The dam inventory identified in the risk assessment included information about the year that dams were constructed, their height, length, storage capacity and discharge. (See following Table.) This information can be used to prioritize the dams based on height and water volume that could be discharged in the event of a failure.

Mitigation Goal

- To support dam safety legislation at such time as it may be introduced in the Alabama legislature.

- To work with local property owners to initiate voluntary local actions to assess the status of existing dams.

Mitigation Activities

(i) Activities

1. Update the 1885 dam inventory of Pike County, using aerial photography and local knowledge, to identify additional existing impoundments with dam structures.

2. Coordinate with local land owners and request technical assistance from the Corps of Engineers regarding the condition of the larger dams.

3. Coordinate with local land owners and request technical assistance from the Natural Resource Conservation Service and the Soil and Water Conservation Committee regarding the condition of dams at farm ponds.

(ii) Priority and Timeline

The initial priority will be placed on compiling an inventory of local dams. This is expected to take one year elapsed time. The initiation of the project may depend on financial resources being available to pay for the inventory.

Following completion of dam the inventory contact will be made with the property owners of large impoundments to request that they permit a voluntary inspection of the dam.

(iii) Implementation Authority

The initial phase of this project is a planning study. No additional authority is required. Since there is no state authority to inspect dams and levees the voluntary cooperation of local land owners will be required. If voluntary cooperation is not secured, then local inspections can not be completed.

(iv) Resources Needed

Cooperation is required with the U. S. Army, Corps of Engineers and the Natural Resources Conservation Service at the federal level. Financial assistance for technical assistance may be necessary through these agencies to complete the preliminary assessment of water impoundments in Pike County. Resources may be required to conduct dam break analysis for various water impoundment structures in Pike County if it is determined that certain structures represent a higher level of risk.

Mitigation Strategy for Earthquake

Relation to Risk Assessment

The risk assessment has determined that low magnitude, seismic waves may be felt in Pike County, but historically the epicenter has been at least 100 miles outside the county. The low magnitude waves experienced in Pike County are unlikely to cause damage.

Existing Programs and Policies

There are no specific earthquake programs in Pike County. Routine emergency operating procedures will be employed in the event of an earthquake. The County will also rely on the state Emergency Management Agency due to their experience with earthquake occurrences in other parts of Alabama.

Mitigation Goal

- In the event of a damaging earthquake, to notify other emergency agencies, utilities and other appropriate agencies, and utilize routine emergency operating procedures.

Mitigation Activities

(i) Activity

1. Notify other appropriate agencies, using a prepared call list, that an earthquake event has occurred and inform them of the actions to be taken.

2. Implement traditional emergency operating procedures using the updated 2004 Emergency Operations Plan.

(ii) Priority and Timeline

These activities would be dependent on the occurrence of a damaging earthquake. There is no predetermined priority or timeline established.

(iii) Implementation Authority

No additional authority is required.

(iv) Resources Needed

In the unlikely event of earthquake tremor damage to structures a wide range of assistance may be required. This could range from technical assistance to assess the location and extent of damage to resources to repair damaged infrastructure or structures.

Hazard	Action	Activity Phase: Pre Planning	Activity Phase: Advance Prep	Activity Phase: Response	Activity Phase: Recovery	Type Activity: Administration	Type Activity: Education and Awareness	Type Activity: Research	Type Activity: Mitigation Plan	Type Activity: Improvements	Type Activity: Technical Assist	Jurisdiction	Responsibility	Priority	Funding: Five Year Total	Funding: Annual Budget	Funding: Sources	Timeline: 2005	Timeline: 2006	Timeline: 2007	Timeline: 2008	Timeline: 2009
Administrative Strategy																						
	Membership in Southeast Alabama (SE AL) Mutual Aid Compact	O				O						All	PCEMA	Med	$0	$0	NA	O	O	O	O	O
	Review legal detail of SE AL Mutual Aid Compact		O			O						All	PCC	Med	$2,500	$2,500			O			
	Natural hazard event data base	O						O				All	PCEMA	Med	$12,500	$2,500		O	O	O	O	O
	Contacts / MOU's for data updates	O						O					PCEMA	High	$5,000	$1,000		O	O	O	O	O
	Local Hazard Mitigation Plan Update	O							O				PCEMA PCLEPC	High	$15,000	$2,000 to $7,000		O	O	O	O	O
	Database input and risk / vulnerability review	O							O				PCEMA PCLEPC	High	$8,750	$1,750		O	O	O	O	O
	LEPC reviews of local Hazard Mitigation Plan	O							O				PCLEPC	High	$2,500	$500		O	O	O	O	O
	Inventory status of local planning programs	O							O				PCEMA	High	$3,500	$3,500			O			
	Local merchant supply network		O						O			All	PCEMA	High	$25,000	$25,000				O	O	O
	Contractor licensing			O		O						All	All	Med		As needed						
	Educate citizens about Alabama law and hotline		O				O						PCEMA	Med	$13,500	$4,500				O		
	Monitor contractors during hazard events			O	O	O							All	High		As needed						
Severe Thuinderstorms and Tornadoes																						
	Expand warning siren network		O							O			PCC	High	$140,000	$20,000		O	O	O	O	O
	Assess highly populated facilities		O								O		Various	Low	$40,000	$40,000					O	
	Construct community shelters		O							O		Bks, Brd, Gos, Troy		High	$1,840,000	$460,000			O	O	O	O
	Promote residential safe rooms		O							O			All	Med	$75,000	$15,000		O	O	O	O	O
	Establish shelter in Town Banks		O							O		Bks		Med	$25,000	$25,000				O		
Hurricanes and Coastal Storms																						
	See Severe Thunderstorms and Tornadoes																					
Drought and Heat Wave																						
	Participate in State drought monitoring			O			O						PCEMA	High	$5,000	$2,500				O		O
	Disseminate information to local authorities			O			O						PCEMA	High	$10,000	$5,000				O		O
Winter Storms and Freezes																						
	Pre-arrange for supplies (sand and salt)		O			O							All	Med	$5,000	$1,000		O	O	O	O	O
	Disperse equipment with storm warnings		O						O				All	Med	$10,000	$5,000		O	O	O	O	O
	List public owned four wheel drives	O						O					All	Med	$5,000	$1,000		O	O	O	O	O

		Activity Phase				Type Activity								Funding			Timeline				
Hazard	Action	Pre Planning	Advance Prep	Response	Recovery	Administration	Education and Awareness	Research	Mitigation Plan	Improvements	Technical Assist	Jurisdiction	Responsibility	Priority	Five Year Total	Annual Budget	Sources	2005	2006	2007	2008	2009
Wildfires																						
	Training and Preparation																					
	Provide wildfire training for firefighters		O						O				FD All	Med	$45,000	$15,000			O		O	O
	Determine equipment needs to fight wildfires	O								O			FD All	Med	$7,500	$7,500		O				
	Identify water source deficiences and sources	O									O		FD All	Med	$7,500	$7,500				O		
	Fuel Reduction Program																					
	Clean developments with high fuel content		O							O			PW All	Med	$50,000	$10,000		O	O	O	O	O
	Waive tipping fees during clean-up		O			O							PW All	Med	$0	$0		O	O	O	O	O
	Education and Awareness																					
	Citizen brochures to prevent wildfires	O					O						PCEMA	Med	$1,250	$1,250			O			
	Broadcast notices of burn restriction periods		O				O						Media	Med		As needed		O	O	O	O	O
Floods																						
	Continue implementation of NFIP	O				O							All	High	$50,000	$10,000		O	O	O	O	O
	Modify municipal zoning ordinaces to limit impervious surface	O				O							Cities	High	$15,000	$2,500 to $5,000		O	O	O	O	O
	Amend subdivision regulations for storm water control	O				O							All	Med	$15,000	$2,500 to $5,000		O	O	O	O	O
	Update county bridge inventory	O						O					PCEng	High	$4,500	$4,500					O	
	Secure new flood maps and verify clear floodway	O						O								Pending						
Erosion, Landslides and Sinkholes																						
ESS	Coordinate with U. S. Geological Survey for verification and extra data on sinkholes and subsidence	O							O			All	PCEMA PCEng	Med		$0			O			
ESS	Coordinate with Natural Resources Conservation Service on soil data and erosion	O							O			All	PCEMA PCEng	Med		$0			O			
ESS	Coordinate with Alabama Soil and Water Consrvation Committee regarding "best management practices" for erosion prevention	O							O			All	PCEMA PCEng	Med		$0			O			

		Activity Phase				Type Activity								Funding			Timeline				
Hazard	Action	Pre Planning	Advance Prep	Response	Recovery	Administration	Education and Awareness	Research	Mitigation Plan	Improvements	Technical Assist	Jurisdiction	Responsibility	Priority	Five Year Total	Annual Budget	Sources	2005	2006	2007	2008	2009
Dam and Levee Failure																						
	Update dam inventory	O						O					All	Med		$2,500					O	
	Coordinate with Corps of Engineers regarding large dams	O							O				PCEMA	Med		$0					O	
	Coordinate with Natural Resource Conservation Service regarding small dams	O							O				PCEMA	Med		$0					O	
Earthquake																						
	Notify appropriate agencies in event of earthquake resulting in damage			O		O							PCEMA	Low		As needed						
	Implement procedures in 2004 Emergency Operations Plan			O	O						O		PCEMA	Low		As needed						

Plan Maintenance Process

This section of the report presents the methodology by which the "Multi Jurisdiction Hazard Mitigation Plan for Pike County and the municipalities of Banks, Brundidge, Goshen and Troy, Alabama" will be maintained. This process was developed drawing on information from other existing planning programs. Future hazard mitigation planning should be coordinated with the various planning processes that are used within the county to develop and update other plans. The current planning procedures that should be coordinated include the following.

- Municipal comprehensive plans and land use regulations
- County comprehensive plan
- Emergency Management plans, including updates to the Emergency Operations Plan
- Conecuh and Pea River Basin Watershed Plans
- Alabama Drought Management Plan
- Plans and Assessments prepared by other public entities (such as the Soil and Water Conservation Committee - County Assessment) and non-profit organizations within Pike County

Pike County Planning Coordination Committee

To coordinate the above planning efforts it is recommended that a "Pike County Planning Coordinating Committee" be established. Representatives from the four municipalities, the county and other planning groups, such as the South Central Alabama Development Commission, should be appointed to attend regularly scheduled meetings (semi-annually suggested) to discuss planning issues that need to be coordinated. At the meetings each entity could update the committee on the status of their specific planning project. Other committee members would then be able to identify those areas of concern that require mutual cooperation and coordination. The purpose of the committee would be to insure that plans are coordinated to achieve the goals of each plan and entity represented on the committee and to eliminate duplication of effort. A facilitator that is familiar with the various planning efforts could coordinate the efforts of the committee.

Some planning efforts, such as the Conecuh and Pea River Basin Watershed planning process will only be active for a limited period of time. A representative should participate on the planning committee while each basin planning effort is active. Other planning efforts, such as the Alabama Drought Management Plan, only requires activity when drought conditions have been identified by the state Office of Water Resources. Initial action should be taken by the committee and its respective members by obtaining a recent draft of the Alabama Drought Management Plan and reviewing the document so the group is familiar with the requirements of the plan. As an alternative, the committee could invite a state representative to make a presentation on the current Drought Management Plan. The local planning coordinating committee should select representatives to attend state drought meetings, when applicable, because drought is one of the natural hazards included in the local hazard mitigation plan.

Municipal Comprehensive Plans and Land Use Regulations

Local representatives familiar with the plans for each jurisdiction should be included on the local planning coordinating committee. These representatives can brief the committee on the status (current or outdated), content, geographic coverage and purpose of each local plan. Based on the information presented the planning coordinating committee can identify areas of concern and potential conflicts.

Municipalities in Alabama are authorized to prepare and adopt a comprehensive plan and related land use controls such as zoning and subdivision regulations. Some of the municipalities within Pike County have already prepared plans and adopted land use regulations. The planning coordinating committee should ensure that there are no conflicts between the various plans within the county and encourage updating as needed. In some instances, modifications to land use regulations may assist in implementing other plans.

County Comprehensive Plan

The Pike County "Land Use Plan" and "Transportation Plan" were prepared in 1975. The plan contains a significant amount of information that remains relatively constant over time but needs minor updating to reflect the refined information that may now be available. Other portions of the plan require more significant updating to reflect the growth that has occurred over the past 28 years and to ensure coordination with local municipal plans and other current planning efforts. Based on the geographic coverage of local municipal plans the area to be included in the Pike County update can be adjusted to minimize overlap.

The Pike County planning effort could also be used to assess the similarities and differences between municipal plans. Over time the process should strive for consistency of content between all plans.

Emergency Management Plans

The Pike County Emergency Management Agency has completed an update of the county Emergency Operations Plan (EOP) and actively participated in the preparation of this Natural Hazard Mitigation Plan. Both the implementation activities and on-going planning activities related to these plans can be coordinated with other plans within the county. This can be accomplished by providing information to other entities through the local planning coordinating committee and advising the committee representatives of the mitigation strategies and activities for each natural hazard.

Conecuh and Pea River Basin Watershed Plans

The Alabama Clean Water Partnership is responsible for preparing a watershed management plans to address nonpoint source pollution in the Pea and Conecuh River watersheds. When this plan is prepared it must identify issues and propose management measures to preserve and protect the water quality of the two watersheds. Proposals for the sub-watersheds pertaining to the two river basins that are located in Pike County should be coordinated with other county planning efforts.

Securing a representative from the basin planning area to participate on the local planning coordinating committee is the initial step. Concerns in watershed / water quality planning address topics such as the amount and rate of storm water runoff. This is especially pertinent to flooding and can extend to other areas such as open spaces represented by forested areas with wildfire potential.

Alabama Drought Management Plan

The draft Alabama Drought Management Plan was released in September, 2003 and received subsequent minor updates. Since the Drought Management Plan provides a monitoring mechanism and procedure to track drought conditions throughout Alabama it has a direct bearing on the local hazard mitigation plan. A Pike County representative should actively participate in the state plan and process as a means to implement local drought management measures.

The mitigation strategy and activities proposed that the Emergency Management Agency assume this responsibility. Information secured regarding drought conditions should then be communicated to other entities in Pike County. The planning coordinating committee should work with water utilities to be sure that each entity has a drought mitigation plan that can be locally implemented to minimize the impact of drought conditions.

Other Plans and Assessments

A homeland security assessment has been prepared for Pike County. As the natural hazard plan is expanded to include all hazards the findings of the county homeland security assessment can be used to provide valuable information to expand the natural hazard mitigation plan into an all hazard mitigation plan.

Other local entities, such as water authorities and private industries, have prepared assessments of their own facilities (e.g. Tier Two assessments). Although the sharing of detailed information regarding these assessments may be limited for security reasons, the ability to coordinate protection and mitigation measures across the county will be very important.

Procedure to Incorporate Mitigation Plan and Activities

Copies of the adopted *"Multi Jurisdiction Hazard Mitigation Plan for Pike County and the Municipalities of Banks, Brundidge, Goshen and Troy, Alabama"* were distributed to each local officials in each jurisdiction and the local agencies and departments responsible for planning and development. The Pike County Emergency Management Agency will encourage each jurisdiction and planning agency to consider the hazard mitigation plan when: a) preparing local plans and regulations; b) implementing flood plain management ordinances; c) formulating local budgets; and d) other city or county plans and programs as appropriate. The process for adopting such plans, regulations and ordinances shall be as prescribed by the Code of Alabama, 1975 as amended and applicable local ordinances and rules of procedure. The Pike County Emergency Management Agency and the staff of the South Central Alabama Development Commission will be available to every jurisdiction, department or agency to provide technical assistance when requested. By following the above procedures local governments can incorporate mitigation and other plans into appropriate local plans, regulations and administrative procedures for implementation.

Monitoring and Evaluating the Local Hazard Mitigation Plan

The "Multi Jurisdiction Hazard Mitigation Plan for Pike County and the municipalities of Banks, Brundidge, Goshen and Troy, Alabama" will be monitored and evaluated using two procedures. First, the Pike County Local Emergency Planning Council will monitor the need for changes to the plan on an annual basis. Prior to the annual review all units of local government will be asked for their input.

The second procedure for monitoring and evaluation will be triggered by hazard events that occur in Pike County. Following any natural hazard event the appropriate section of the local hazard mitigation plan will be reviewed. Participants in this review process will include representatives of local governments and all agencies involved in response and recovery from the natural hazard event. Recommended plan changes will be presented to the Pike County Local Emergency Planning Council.

Regardless of the procedure that generates a recommended change, the Pike County Local Emergency Planning Council and the Pike County Emergency Management Agency will prepare the necessary changes and inform the local units of government in Pike County about proposed changes to the plan. Assuming the proposed changes do not require local financial commitments the chief executive officer shall provide written approval of the proposed changes. When changes to the local plan require a local expenditure of funds the proposed modifications will be presented to the respective governing body for approval.

If the two monitoring and evaluation procedures described above do not recommend any changes within a three year period following the last formal adoption by local units of government, then the local hazard mitigation plan will be circulated for review and comment during the fourth year. The Emergency Management Agency shall be responsible for distribution. Any comments received will be evaluated by the local EMA and the Local Emergency Planning Council. Changes will be made to the local hazard mitigation plan as appropriate. The changes will be presented to local units of government during the fifth year for formal adoption.

Citizen Participation in Plan Maintenance Process

Prior to local units of government adopting any proposed changes to the *"Multi Jurisdictional Hazard Mitigation Plan"* the Pike County EMA will conduct a public meeting to receive comments on the proposed changes. This step in the monitoring, evaluation and update procedure will meet the requirement for citizen participation in the plan maintenance process.

Adoption and Documentation of Changes

Copies of all adopted changes and appropriate documentation of adoption by local governments will be distributed to the appropriate agencies including the state and federal emergency management agencies.

Multi Jurisdiction Hazard Mitigation Plan
Confidential Appendix

Pike County
and the Municipalities of
Banks, Brundidge, Goshen, and Troy, Alabama

Introduction

This appendix is considered an integral part of the Multi Jurisdiction Hazard Mitigation Plan. While this information is necessary for decision making, it is considered sensitive because it identifies facilities that are critical to the response, recovery and return to daily operations. From the viewpoint of homeland security the widespread distribution of information about these facilities and services could be used to identify potential weak points that would delay response, recovery and the return to daily operations.

In addition, some information contained in this report identifies facilities that would be used during a natural disaster. In the event of a natural disaster it is necessary to determine the immediate usefulness of facilities before directing the public to them. It would be useless and disheartening if citizens thought certain services and facilities were available only to find that the facility was damaged. Also, by limiting the distribution of information regarding these facilities it prevents citizens from declaring a personal disaster and expecting shelter or services when a public emergency does not truly exist.

Planning Process

The main body of the plan describes the local planning process required by applicable regulations. The discussion did not identify the process used for the identification of critical facilities and infrastructure. That information is presented in the following paragraphs.

Plan Preparation and Process Participation

No facilities or infrastructure were initially identified as critical by the South Central Alabama Development Commission. During meetings with each of the local governments the local officials were asked to identify critical facilities for their jurisdiction. The information was compiled and submitted to the Local Emergency Planning Council and local officials for review and comment.

Critical Facilities

The following critical facilities were identified by local officials in Pike County, Alabama. The information has been grouped by type of facility and service. Essentially the majority of facilities that were identified include facilities and equipment needed to immediately respond to emergencies and to continue on-going operations that will enable either communities or the county to return to day-to-day operations in an orderly fashion.

Utilities

1. Electric
   - Electric utility substations
   - Electrical back-up

Electric Service

Pike County Electric Suppliers

Alabama Electric Cooperatives, Inc.
Post Office Box 550
Andalusia, AL
36420-0550

Service Area: Electric Cooperatives and City of Brundidge

Alabama Power Company
24 Dexter Avenue
Montgomery, Alabama
36104-3739

Service Area: Areas not served by electric cooperatives or City of Brundidge

Pike County Electric Distributors

Brundidge Electric Department
Post Office Box 638
Brundidge, Alabama
36010-0638
Service Area: City of Brundidge

Dixie Electric Cooperative
Post Office Box 30
Union Springs, Alabama
36089-0030
Service Area: Extreme northern Pike County

South Alabama Electric Cooperative
Post Office Box 449
Troy, Alabama 36081-0049
Service Area: Rural Pike County

Troy Utilities Board
Post Office Box 549
Troy, Alabama
36081-0549
Service Area: City of Troy

Alabama Power Company
24 Dexter Avenue
Montgomery, Alabama
36104-3739
Service Area: Areas not served by Dixie and South Alabama Electric Cooperatives or cities of Brundidge and Troy

2. Gas

No utilities in this category were identified locally. The following were added by the South Central Alabama Development Commission because they serve portions of Pike County.

Natural Gas

Pike County Natural Gas Suppliers

Southeast Alabama Gas District
Post Office Box 1338
Andalusia, Alabama
36420-1338
(Also has offices in Brundidge and Troy)

Southern Natural Gas Company
Post Office Box 2563
Birmingham, Alabama
35202-2563
Pike County Natural Gas Distributors

Alabama Gas Corporation (ALGASCO)
605 Richard Arrington, Jr., Boulevard
Birmingham, Alabama
35203-2707
(closest office in Montgomery)

Southeast Alabama Gas District
Post Office Box 1338
Andalusia, Alabama
36420-1338

3. Sewer

- Sewer systems
- Pumping stations (sewage)
- Sewage treatment plants

4. Water

- Water systems
- Water utility standpipes (water towers)
- Water system offices and equipment sheds

Water Systems

Pike County, Alabama

Banks Water System
Post Office Box 6666
Banks, Alabama
36005-6666

Brundidge Water System
Post Office Box 638
Brundidge, Alabama
36010-0638

Goshen Water Works
Post Office Box 146
Goshen, Alabama
36035-0146

Pike County Water Authority
3860 U. S. Highway 231 South
Troy, Alabama
36081-5473

Troy Utilities Department
Post Office Box 549
Troy, Alabama
36081-0549

Medical and Health

1. Hospital
   - Troy Regional Medical Center

2. Medical and Related Facilities
   - Health care facilities (to be identified in the future)
   - Pike County Health Department
   - Nursing Homes

Nursing Homes
Pike County, Alabama

Magnolia Wood Lodge
826 Park Street
Troy, Alabama

Magnolia Wood Lodge II
1655 Elba Highway
Troy, Alabama

Magnolia Wood Lodge III
1655 Elba Highway
Troy, Alabama

Pike Manor Health Care Center
Elba Highway
Troy, Alabama

Whittington Manor
326 South Main Street
Brundidge, Alabama

Public Safety

1. Law Enforcement
   - Police stations and equipment
   - (See public facilities below)

2. Fire Protection
   - Fire departments

Public Facilities and Services

- Municipal buildings including community centers located in main buildings and public safety and utilities not located in main buildings
  - Special mention was made regarding the Troy Police Department which houses the emergency communications center
  - Public works facilities and equipment are assumed to be included in this category
- Pike County Courthouse
- Alabama National Guard Armory

Communications and Transportation

- Post offices
- Public media facilities including telephone, cable (television), and radio
- Airport (Troy)

Other Facilities and Local Businesses

- Storm shelters
- Churches
- Banks Buy Rite (store located in Banks providing local source of food and fuel)
- Troy University (special note made regarding housing structures)
- Grocery stores

- Jeter Oil (Goshen area due to gas tanks)
- Goshen Cooperative (due to chemicals)

Sensitive Populations and Housing

1. Elderly
   - Homes of the elderly
   - Elderly population (Also see nursing homes above.)

2. Youth
   - Schools (Elementary through high school)

3. Manufactured Housing
   - Manufactured (mobile) homes
   - (Also see housing at Troy University above.)