Adams County, Indiana

Multi-Hazard Mitigation Plan

MULTI-HAZARD MITIGATION PLAN

Prepared for:

Adams County, Indiana
City of Berne, Indiana
City of Decatur, Indiana
Town of Geneva, Indiana
Town of Monroe, Indiana
Town of Preble, Indiana
Maumee River Basin Commission

April 2005

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CBBEL Project Number 04-319

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1.0 INTRODUCTION

1.1 PROJECT SCOPE AND PURPOSE

The development of a Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). According to DMA 2000, the purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

In order for National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt either their own MHMP or participate in the development of a multi-jurisdictional MHMP. The State Emergency Management Agency (SEMA) and the Federal Emergency Management Agency (FEMA) Region V offices administer the MHMP program in Indiana.

The Adams County MHMP is a multi-jurisdictional planning effort led by the Adams County Emergency Management Agency (EMA) in cooperation with the Maumee River Basin Commission (MRBC). This Plan was prepared in partnership with Adams County, the City of Berne, City of Decatur, Town of Geneva, Town of Preble, and the Town of Monroe. Although the Town of Preble and the Town of Monroe are not NFIP communities, they participated in the development of this plan. Representatives from each of these communities attended Planning Committee meetings, provided valuable information about their community, reviewed and commented on the draft MHMP, and assisted with local adoption of the approved Plan. Since each of the communities participating had an equal opportunity for participation and full representation in the planning process, the process used to develop the Adams County MHMP satisfies the requirements of DMA 2000 in which "multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the planning process."

The development of this MHMP is the necessary first step of a multi-step process to implement programs, policies, and projects to mitigate the effect of hazards in Adams County. The intent of this planning effort was to identify the hazards and the extent that they affect Adams County, and to determine what type of mitigation strategies or projects may be undertaken to mitigate for these hazards. Although this MHMP meets the requirements of DMA 2000 and eligibility requirements of the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM) Grant, as well as other FEMA programs including the NFIP Community Ratings System (CRS), additional detailed studies will need to be completed prior to applying for these grants or programs.

NFIP/CRS

Throughout this Plan, activities that could count toward CRS points are identified with the NFIP/CRS logo. The CRS is a voluntary incentive program that recognizes and encourages community floodplain activities that exceed the minimum NFIP requirements. As a result, flood insurance premiums rates may be discounted to reflect the reduced flood risk resulting from community actions that meet the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote education and awareness of flood insurance. Savings in flood insurance premiums are proportional to the points assigned to various activities. A minimum of 500 points are necessary to enter the CRS program and receive a 5% flood insurance premium discount. This Plan could contribute as many as 294 points toward participation in the CRS. Only the City of Decatur currently participates in the CRS program. The City of Decatur currently has Class 9 recognition in the

CRS program where flood insurance policyholders receive a 5% discount on their insurance premiums.

Funding to prepare this MHMP was made available through a Pre-Disaster Mitigation Planning (PDM) grant that the SEMA awarded to the Adams County EMA. The MRBC provided the 25% cash match required by the grant. Christopher B. Burke Engineering, Ltd. (CBBEL) was hired to facilitate the planning process and prepare the Adams County MHMP.

1.2 PLANNING PROCESS

The planning process to prepare the Adams County MHMP took 12 months and began in June 2004 when the Adams County EMA Director requested funds from SEMA to prepare a MHMP for the County and NFIP communities. Once those funds were awarded in September 2004, the County Commissioners agreed to contract with CBBEL.

In order to meet the deadline imposed by DMA 2000, the planning process to prepare the Adams County MHMP was on an accelerated timeline. In August 2004, the EMA Director compiled a list of Planning Committee members that met during the months of September, October, and November. In November 2004, a media release regarding the planning process and opportunities to comment on the draft Plan was published in the local paper. From September through February 2005, CBBEL researched and compiled historic hazard data necessary to prepare the MHMP. In April 2005, CBBEL provided the draft Adams County MHMP to the Planning Committee for their review and comment. Once changes were made to the draft Plan, a public meeting was scheduled in March 2005 and the Plan was made available to the public and other interested parties. Public comments were accepted through April 2005 and then the Plan was forwarded to SEMA and FEMA for their review and comment. The comments from SEMA and FEMA were incorporated into the draft Plan and reviewed by the Planning Committee. Local adoption of the MHMP by Adams County, the City of Berne, City of Decatur, and the Town of Geneva was complete in May 2005.

1.3 PLANNING COMMITTEE

The Adams County MHMP Planning Committee was a new committee specifically formed to develop this Plan. Members included representatives from the MRBC, Adams County, City of Berne, City of Decatur, Town of Geneva, Town of Preble and the Town of Monroe that are involved in disaster mitigation efforts. The 27-member Planning Committee included representatives from engineering, emergency management, public information, public safety, public works, planning, zoning and code enforcement, parks and recreation, and public utilities. **Table 1-1** lists the individuals that participated on the Planning Committee and the entity they represented.

The Planning Committee met on September 23, 2004, October 19, 2004, November 17, 2004, and April 18, 2005. These meetings were at the Adams County Emergency Operations Center (EOC) office. Each meeting was 2 hours in length and well attended by representatives from each community. The Planning Committee worked efficiently to discuss and make decisions on the information presented at each meeting. During these 3 meetings, the Planning Committee successfully identified critical facilities and local hazards; reviewed the State's mitigation goals and set local mitigation goals; reviewed hazard data and maps; identified and assessed the effectiveness of existing mitigation measures; established mitigation projects; and discussed public participation; and reviewed the draft MHMP. A sign-in sheet recorded those present at each meeting to document participation. Meeting agendas and summaries are included in **Appendix 1**.

Members of the Planning Committee attended the public meeting on April 18, 2005 and assisted with adoption of the Adams County MHMP in each of their jurisdictions.

Table 1-1
MHMP Planning Committee

Name		Title	Representing
Tim	Barkey	Engineer	Adams County Engineering Dept
Steve	Baumann	Commissioner	Adams County Commission
Louise	Busse	Clinic Director	Adams County Health Dept
Anne	Butcher	Superintendent	Decatur Waste Water Dept
John	Byer	Supervisor	Adams County Highway Dept
Joel	Christian	Superintendent	Decatur Street Dept
Russell	Cook	Chief	Monroe Fire Dept
Richard	Crider	Chief	Berne Police Dept
Kurt	Dailey	Superintendent	Berne Public Works
Dan	Elzey	Chief	Preble Fire Dept
Ed	Ford	Director	Adams Memorial Hospital
Steve	Hampshire	Town Manager	Geneva
Jim	Inskeep	Superintendent	Decatur Water Dept
Rob	Johnson	Marshal	Geneva Police Dept
John	Kleinknight	Chief	Geneva Fire Dept
Steve	Krull	Director	Adams County & Decatur Parks
Jeff	McIntosh	Deputy Chief	Decatur Police Dept
Kevin	McIntosh	Town Marshal	Monroe
Ivan	Nevil	Director	Adams County EMA
Art	Nussbaum	Chief	Berne Fire Dept
Mary	Ogg	Councilor	Adams County
Neil	Ogg	Bldg Inspector	Adams County Building and Planning
Charles	Padgett	Sheriff	Adams County Sheriff Dept
Rodney	Renkenberger	Executive Director	Maumee River Basin Commission
Marty	Shaffer	Superintendent	Monroe Utilities
Jan	Smith	Chief	Decatur Fire Dept
Terry	Smith	Enviro Director	Adams County Health Dept

1.4 PUBLIC INVOLVEMENT IN THE PLANNING PROCESS

In November 2004, a media release was distributed to the newspapers, radio stations, and television stations in Adams County and was titled, “How do tornadoes, floods, and severe winter storms affect you?” The article identified the communities participating in the MHMP effort, the requirements of DMA 2000, and 4 questions about hazard awareness to which interested residents could respond.

A media release announcing a public meeting on April 18, 2005 was distributed to the newspapers, radio stations, and television stations in Adams County. The Decatur Democrat reported on the public meeting and interviewed the Planning Committee members. Additional comments on the draft Adams County MHMP were collected during the public meeting. **Appendix 2** includes a copy of the media release.

1.5 INVOLVEMENT OF OTHER INTERESTED PARTIES

Neighboring EMA Directors in Allen County, Wells County, Jay County, Van Wert County (Ohio) and Mercer County (Ohio), as well as interested agencies, businesses, academia, and nonprofits were invited to review and comment on the draft Adams County MHMP.

NFIP/CRS

The CRS program credits NFIP communities a maximum of 100 points for organizing a planning committee composed of staff from various departments; involving the public in the planning process; and coordinating among other agencies and departments to resolve common problems relating to flooding and other known natural hazards.

2.0 COMMUNITY INFORMATION

This Section provides a broad perspective of the history, physical conditions, and development of Adams County.

2.1 TOPOGRAPHY

Adams County's topography consists of a nearly flat plain dissected by the St. Mary's River and Wabash River in addition to many creeks and streams. Low relief and few abrupt changes in elevation characterize the physiographic conditions of the County, except for areas near the major rivers where erosion and entrenchment of the river valley is greatest. The highest elevation (895 feet, NAVD) in Adams County is located in the southeastern corner of the county near the border with Jay County. The lowest elevation (approx. 750 feet, NAVD) is in the floodplain of the St. Mary's River at the northern border of the county. The range in local elevation is between 750 feet, NAVD and 875 feet, NAVD.

2.2 CLIMATE

Average annual temperature for Adams County is 50.3 degrees Fahrenheit (ºF). Extreme temperatures in the past have an average range between 20.2 ºF in January and 72.5 ºF in August. Precipitation averages 34.27 inches a year with the wettest month being June (4.17 inches) and the driest month is December, with 2.09 inches. Snowfall averages 28.7 inches per year.

2.3 DEMOGRAPHICS

Adams County is experiencing average growth for Indiana, and ranks 43 among 92 counties. According to Stats Indiana, Adams County experienced a population growth of 9.7% between 1990 and 2000. The 2003 population of Adams County is 33,592; however, the population is projected to decrease slightly in the future to 33,458 by 2010. **Table 2-1** lists the individual 2003 population for several communities in Adams County.

Table 2-1
2003 Population Data

	Population	% County
Adams County	33,592	100
City of Berne	4,121	12.3
City of Decatur	9,459	28.2
Town of Geneva	1,335	4.0
Town of Monroe	732	2.2

(Source: Stats Indiana – Adams County Indiana Profile, 2004)

In 2003, the median age of the population in Adams County was 33.1 years. The largest demographic age groups in the county were school age children (5–17 years), young adults (25-44 years), and older adults (45-64 years) with a distribution within the county of 22.8%, 24.4%, and 21.4%, respectively. The ethnic majority in Adams County is white which comprises 99.0% of the population. Hispanic or Latino is the next largest ethnic group in the County. Approximately 30% of the population in Adams County is married with children and 73.3% of residents own their home. **Appendix 3** contains more details on Adams County's demographics.

2.4 ECONOMY

In 2003, 83.7% of the working population in Adams County worked in the private sector that includes retail trade, construction, professional technical services, and health care and social services, among others. The annual per capita personal income in 2002 was $23,512 and the median household income in 2000 was $41,489. The number of individuals commuting out of the County for work was slightly more (16.4%) than those commuting into the County for work (14.3%). **Appendix 3** contains more details on Adams County's economy.

2.5 INDUSTRY

The largest employers and 2004 employment statistics in Adams County include: Adams County Memorial Hospital (number of employees is confidential), Berne Medical Center (number of employees is confidential), All American Homes (280), Warehouse Logistics (40), Fleetwood Motorhomes (1,400), Thunderbird Products (450), Strick Corp. (335) and Bing Assembly Systems (300).

2.6 LAND USE AND DEVELOPMENT TRENDS

Ninety-three percent of the County is cultivated or used for agricultural production; distribution of this land-use activity dominates the County. Residential development is approximately 1% of the total land use in Adams County and is concentrated in the City of Decatur, City of Berne, Town of Monroe, and the Town of Geneva. **Table 2-2** displays the distribution of land-use types within Adams County. The population of Adams County is not growing significantly and future population estimates place the population at 33,458 in 2010.

Table 2-2
Land Use (acres)

	Agriculture	Commercial/Industrial	Forested	Residential	Wetlands
Adams County	202,039.55	1,098.00	10,210.48	2,039.18	1,520.32

(Source: MRLC, 2001)

2.7 RIVERS AND WATERSHEDS

According to the Indiana Department of Environmental Management (IDEM), there are 83 waterways in Adams County. **Table 2-3** lists the waterways identified.

The St. Mary's River is the largest waterway in Adams County, though the Wabash River is also a significant watercourse. The majority of the waterways listed below drain to either the Wabash River or the St. Mary's River before leaving the County boundaries.

Table 2-3
List of Waterways

ADLER DITCH	GLENDENNING DITCH	PEEL DITCH
ANDERSON DITCH	GOSS SWITZER DITCH	RICE DITCH
ASPY DITCH	HABEGGER DITCH	ROTH DITCH
AYERS DITCH	HAHNERT DITCH	RUPEL DITCH
BARR DITCH	HENDRICKS DITCH	RUPPERT DITCH
BERRY DITCH	HENSCHEN DITCH	SCHEERY DITCH

BLAIR DITCH	HESSLER DITCH	SCHODER DITCH
BLUE CREEK	HIERLY DITCH	SCHUGG DITCH
BLUHM DITCH	HOLTHOUSE DITCH	SELKING DITCH
BORUM RUN	JAMSTUTZ DITCH	SHOEMAKER DITCH
BRACHT DITCH	JOHNSON DITCH	SMITH DITCH
BREINER JOINT DITCH	KOHNE NO 1 DITCH	SMITH SHOEMAKER DITCH
BREWSTER DITCH	KOHNE NO 2 DITCH	SPRUNGER DITCH
BROWN DITCH	KOOS DITCH	ST MARY'S RIVER
BULHMAN DITCH	KUTZMAN DITCH	STRAIGHT BRANCH
COMPRO-WITTMER DITCH	LAMBERT DITCH	SULLIVAN DITCH
CONRAD DITCH	LEICHTY DITCH	SWARTZ DITCH
DUER DITCH	LIMBERLOST CREEK	THREEMILE CREEK
EGLEY DITCH	LITTLE BLUE CREEK	TWENTYSEVEN MILE CREEK
ENGLE DITCH	LOBLOLLY CREEK	WABASH RIVER
FARLOW DITCH	LONGNECKER DITCH	WAGNER NO 1 DITCH
FERGUSON DITCH	MARTZ CREEK	WEBER DITCH
FUCH DITCH	MEYER DITCH	WERLING JOINT DITCH
GALLMEYER DITCH	MOSER DITCH	WERLING-MYERS DITCH
GATES DITCH	NICKELSEN CREEK	WILLARD STEINER DITCH
GERBER DITCH	NORRIS DITCH	WITTMER NO 1 DITCH
GERBER JOINT DITCH	OHLER BRANCH	WITTMER NO 2 DITCH
GERKE DITCH	OHLER DITCH	YELLOW CREEK

(Source: IDEM, 2004)

According to IDEM, there are 32 14-digit Hydrologic Unit Code (HUC) watersheds in Adams County. The largest watershed is the Yellow Creek-Martz Creek Watershed (17,325 acres or 4.80%) and the smallest is St. Mary's River - Willshire Watershed (1,408 acres or 0.39%). **Table 2-4** lists the 14-digit HUC watersheds in Adams County.

Table 2-4
14-Digit Watersheds

14-Digit HUC #	14-Digit HUC NAME	Acres	%County
04100007120040	Hoffman Creek-Bohnke Ditch-Ellison Ditch	14,695	4.07%
04100007120030	Hoffman Creek-Headwaters	14,895	4.13%
04100007120020	Flatrock Creek-Brown Ditch	15,285	4.23%
04100004050040	St. Marys River-Buhlman Ditch	15,083	4.18%
04100004050050	Nickelsen Creek-Lambert Ditch	16,482	4.57%
04100004050030	St. Mary's River-Gerke/Weber Ditches	11,415	3.16%
04100007120010	Flatrock Creek-Headwaters (OHIO)	9,381	2.60%
04100004040090	St. Mary's River-Decatur	5,765	1.60%

04100004040080	St. Mary's River-Borum Run	13,568	3.76%
04100004040010	St. Mary's River-Twenty-seven Mile Creek	2,646	0.73%
05120101110010	Eight mile Creek-Maple Creek	12,413	3.44%
04100004050020	Holthouse Ditch-Kohne Ditches	8,561	2.37%
04100004040060	St. Mary's River-Pleasant Mills	9,360	2.59%
04100004050010	Holthouse Ditch-Berry Ditch	13,473	3.73%
04100004040070	Yellow Creek-Martz Creek	17,325	4.80%
04100004030040	St. Mary's River-Willshire	1,408	0.39%
04100004040050	Blue Creek-Duer Ditch (Adams)	13,490	3.74%
04100004040020	Blue Creek-Headwaters (Adams)	15,639	4.33%
05120101060040	Wabash River-Veracruz	13,686	3.79%
05120101060060	Sixmile Creek-Miller Ditch	11,174	3.10%
04100004030050	Duck Creek (OHIO)	2,697	0.75%
04100004040040	Little Blue Creek	9,914	2.75%
04100004040030	Gates Ditch-Habegger/Farlow Ditches	12,559	3.48%
05120101060030	Wabash River-Threemile Creek	10,040	2.78%
05120101060010	Wabash River-Engle/Jamstutz Ditches	8,858	2.45%
05120101060020	Wabash River-Sullivan Ditch	10,985	3.04%
05120101040020	Wabash River-Brewster Ditch	15,282	4.23%
05120101040010	Wabash River-Hickory Branch-Scherman Ditch	6,693	1.85%
05120101050060	Limberlost Creek-Oakley Ditch	14,467	4.01%
05120101050040	Loblolly Creek-Bear Creek	9,433	2.61%
05120101050020	Loblolly Creek-Votaw Dt/Wolf Creek	13,012	3.61%
05120101050010	Camp Run-Shirk Votaw Ditch	11,250	3.12%

(Source: IDEM, 2004)

2.8 CRITICAL AND NON-CRITICAL FACILITIES

Critical facilities in Adams County identified using the HAZUS-MH database and input from the MHMP Planning Committee includes 98 critical facilities in Adams County. These facilities are 5 dams, 4 airports, 1 broadcast facility, 1 potable water facility, 12 emergency management facilities (includes fire and police), 11 hazardous material sites, 7 medical facilities, 4 power stations, 45 schools, and 4 wastewater treatment plants. **Exhibit 1** illustrates the location of critical facilities and **Appendix 4** lists the critical facilities by NFIP community.

Non-critical facilities identified using the HAZUS-MH database indicates 9,389 buildings in Adams County. These include 9,346 residential, 32 commercial, 8 industrial, and 3 governmental buildings. Critical facilities are in addition to the total number of non-critical buildings identified here; adding all structures together yields 9,487 structures. The development of this MHMP focused on critical facilities; thus, non-critical facilities are not mapped or listed. HAZUS-MH data are conditional in that HAZUS-MH is currently populated based on general national data. Some numbers provided, such as total number of commercial facilities, appear too low and unrealistic. Future updates to the County's MHMP should consider updating the HAZUS-MH default data with more accurate, locally based statistics.

3.0 RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. To realize this goal, a comprehensive examination of natural hazard risk in a community is required. A risk assessment measures the potential loss from a hazard event by assessing the vulnerability of buildings, infrastructure, and people in a community. It identifies the characteristics and potential consequences of hazards, how much of the community will be affected by a hazard, and the impact on community assets. A risk assessment consists of three components: hazard identification, risk analysis (extent of hazard), and vulnerability analysis. Technically, these are three different items, but the terms are often used interchangeably.

3.1 HAZARD IDENTIFICATION

The MHMP Planning Committee reviewed the list of natural hazards prepared by FEMA, identified those hazards that affected Adams County, and agree upon which hazards they would like to study in detail as part of this planning effort. In addition to the list of natural hazards provided by FEMA, the Planning Committee discussed the storage and transport of hazardous materials, urban fire, utility failure, and the fact that they are in the flight path to the Fort Wayne International Airport. As illustrated in **Table 3-1**, the Planning Committee decided to study dam failure, earthquake, flood, severe winter storm, tornado, windstorm, hazardous materials, and utility failure in detail as part of this planning effort.

Table 3-1
Hazard Identification

Hazards	Hazards Affecting Adams County	Hazards for Detailed Study
Avalanche	No	
Coastal Erosion	No	
Coastal Storm	No	
Dam Failure	**Yes**	**Yes**
Drought	Yes	No
Earthquake	**Yes**	**Yes**
Expansive Soils	Yes	No
Extreme Heat	Yes	No
Flood	**Yes**	**Yes**
Hailstorm	Yes	No
Hurricane	No	
Land Subsidence	Yes	No
Landslide	No	
Severe Winter Storm	**Yes**	**Yes**
Tornado	**Yes**	**Yes**
Tsunami	No	
Volcano	No	
Wildfire	Yes	No
Windstorm	**Yes**	**Yes**
Hazardous Materials	***Yes***	***Yes***
Utilities	***Yes***	***Yes***
Flight path to Fort Wayne	*Yes*	*No*

Note: Hazards shown in bold are studied in detail. The Planning Committee added hazards shown in italics.

Table 3-2 identifies an overall Calculated Priority Risk Index (CPRI) for all of the hazards studied as part of this planning effort. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, calculates the CPRI value:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-2
Calculated Priority Risk Index (CPRI) for Adams County

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Flood	Highly likely	Critical	12-24 hrs	> 1 wk	3.40
Severe Winter Storm	Likely	Limited	12-24 hrs	> 1 wk	2.65
Tornado/Windstorm	Possible	Limited	< 6 hrs	< 6 hrs	2.20
Hazardous Materials	Possible	Limited	< 6 hrs	< 1 day	2.00
Utility Failure	Unlikely	Limited	< 6 hrs	< 1 wk	1.85
Dam Failure	Unlikely	Limited	< 6 hrs	< 6 hrs	1.75
Earthquake	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45

According to the CPRI, flood (3.40) ranked as the number one hazard in Adams County followed by severe winter storms (2.65), tornado/windstorms (2.20), storage and transport of hazardous materials (2.00), utility failure (1.85), dam failure (1.75), and earthquake (1.45). **Section 3.2** includes a profile the individual hazards as well as a CPRI value for each NFIP community.

3.2 HAZARD PROFILE

3.2.1 FLOODING

Floods are the most common and widespread of all natural disasters--except fire. Most communities in the United States have experienced some kind of flooding, after spring rains, heavy thunderstorms, or winter snow thaws.

A flood, as defined by the National Flood Insurance Program, is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waters and unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow. Floods can be slow or fast rising but generally develop over a period of days. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in mitigation steps now, such as, engaging in floodplain management activities, acquiring flood-prone homes, elevating or constructing levees, and purchasing flood insurance will help reduce the amount of structural damage to homes and financial loss from building and crop damage should a flood or flash flood occur.

The standard for flooding is a 1% chance of occurrence is for any given time, not just a given year. This is a benchmark used by the FEMA to establish a standard of flood protection in communities throughout the country. The 100-year flood is referred to as the "regulatory" or "base" flood. The term 100-year flood is often incorrectly used and can be misleading. It does not mean that only one flood of that size will occur every 100 years. What it actually means is that there is a 1% chance of a flood of that intensity and elevation happening in any given year. In other words, the flood elevation has a 1% chance of being equaled or exceeded. It is possible to experience multiple 1% events in a relatively short period of time.

Previous Occurrences

Flooding is common in Adams County. The National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC) has identified 15 significant floods in Adams County between April 1994 and July 2003. The total property loss was $96 million during this 11-year period. **Table 3-3** lists the flood events recorded by NCDC.

Geographic Location

The primary source of flooding in Adams County is from the Wabash and St. Mary's Rivers and tributaries to those rivers (**Exhibit 2**). The Wabash River enters the County in the rural southeast corner of the county and continues in a northwest direction through the center of the Town of Geneva and onward through the Town of Linn Grove before leaving the county on the border of French Township and Wells County. The Town of Geneva lies at or near the confluence of several channels that drain into the Wabash River; they include the Limberlost Creek, Engle Ditch, Loblolly Creek, Leighty Ditch and Glendenning Ditch. The St. Mary's River enters the county from Ohio on the southeast corner of St. Mary's Township and flows northwest through the City of Decatur and continue until it exits the county at the northern border of Preble Township. Blue Creek drains into the St. Mary's River approximately 6 miles upstream from the City of Decatur. The Blue Creek watershed drains a significant portion of the central part of the County. Other primary tributaries near the City of Decatur are Holthouse Ditch, Borum Run, Brown Ditch, Kohne No.1 Ditch, and Gerke Ditch.

There are 8 USGS stream gages in Adams County. Two gages are on the St. Mary's River, one is on the Wabash River, and the remaining 5 are on various tributaries throughout the county. Two of the 5 stream gages are located on tributaries upstream of the Town of Geneva on Loblolly (1) and Limberlost Creeks (1). The 3 remaining gages are located on Blue Creek, Holthouse Ditch, and a tributary of Flat Rock Creek. The locations of the 8 USGS stream gages are identified on Exhibit 2.

Hazard Extent

River flooding, flash flooding, and urban flooding are the predominant types of flooding that occur in Adams County. Although the primary source of flooding in Adams County is the Wabash and St. Mary's Rivers and tributaries, localized flooding may also occur in urban areas because of increased imperviousness and inadequate drainage. Flooding and associated flood damage is most likely to occur during the spring because of heavy rains combined with melting snow.

Adams County has experienced many flood disasters that resulted in both Presidential Major Disaster and Governor's Disaster Declarations. These disasters have caused millions of dollars in damages to homes, businesses, personal property, and agriculture. The most recent recorded flood event affecting Adams County and much of central Indiana occurred in July 2003 resulting in approximately $66.6 million in personal and property damage combined. Damage in Adams County was $16.5 million. The previous discharge peak of record was for March 17, 1978 (Linn Grove) and February 10, 1959 (Decatur) for the Wabash and St. Mary's river, respectively. Table 3-3 summarizes the more recent historical flood data available through NCDC.

Table 3-3
Historical Flood Data

Location	Date	Magnitude	Death/Injury	Property/Crop Damage
County +	4-12-94	NA	1/0	$500,000
County +	3-7-95	NA	0/0	$0
County	6-26-95	NA (flash flood)	0/0	$200,000
County +	8-9-95	NA	0/0	$1,100,000
County	8-9-95	NA (river flood)	0/0	$920,000
County	8-17-95	NA (flash Flood)	0/0	$1,000,000
Geneva	7-22-98	NA	0/0	$150,000
Decatur	8-4-98	NA	0/0	$250,000
County +	1-22-99	NA (ice floes)	2/0	$300,000
Berne	7-4-03	NA (flash flood)	0/0	$0
County +	7-5-03	NA	1/0	$16,500,000
County	7-5-03	NA	0/0	$0
Berne	7-6-03	NA (flash flood)	0/0	$0
Geneva	7-6-03	NA (flash flood)	0/0	$0
County	9-1-03	NA (flash flood)	0/0	$0
TOTAL			**4/0**	**$17,312,000**

Note: "County+" denotes that more than Adams County was affected
(Source: NCDC, 2005)

Due to the extent of potential economic loss caused by flooding and the concentration of flood-prone buildings within the City of Decatur, Adams County was divided into two regions. The first region included the City of Decatur. More reliable and detailed flood damage analyses data were available for this region as a result of studies performed by the U.S. Army Corps of Engineers (USACE) in 1992. The analyses were part of a reconnaissance study and additional detailed studies performed by CBBEL and results published in 1995 as part of the Maumee River Basin Flood Control Master Plan prepared for the Maumee River Basin Commission (MRBC). The second region included the remaining area of Adams County, for which detailed data were not available. For this latter region, the GIS-based HAZUS-MH Flood Model was used along with the most recent GIS information to estimate potential economic loss caused by a 100-year and 500-year flood event.

Study Region 1: Decatur

As part of the 1995 MRBC Master Plan, the damage area was divided into five damage reaches. Based on the noted study, 150 buildings, within the St. Mary's River floodplain are subject to 100-year flood damage, of which 1 (Holt Field Airport) is a critical facility. One hundred fifty-three structures were estimated to be damaged in the event of a 500-year flood. A detailed breakdown of the number of buildings expected to sustain some level of damage as a result of a 100-year and 500-year flood is provided in **Table 3-4**.

Table 3-4
Number of Buildings Subject to Flood Damage in Decatur

Stream	100-Year Flood [1]			500-Year Flood [1]		
	Residential	Non-Residential	Total	Residential	Non-Residential	Total
St. Mary's River	129	21	150	130	23	153

Notes: 1 Numbers represent the number of structures that, based on the USACE 1992 study, sustain some damage regardless of their first floor elevations.

To estimate the expected economic loss associated with flooding within Decatur, the summary results of the detailed building damage analyses published in the 1995 MRBC Master Plan study reports was extracted from the report and the extracted values were first adjusted to bring the estimated average annual damage values from a 1992 dollar basis to a 2005 dollar basis. Assuming a 5% average annual appreciation rate, a correction factor of 1.9 resulted from standard cash flow analysis. The adjusted total building loss values were then multiplied by a factor of 2.0 (based on typical HAZUS-MH results) to obtain an estimate of the total economic loss due to flooding. This calculation estimates of damage to buildings and their contents, and includes such losses as business interruption losses, temporary living expenses for displaced residents, and emergency response costs. **Table 3-5** provides a summary of the noted calculations. In addition to the estimated average annual damage values, Table 3-5 also shows an estimate of the present worth of losses prevented over a 50-year period if mitigation measures capable of eliminating all losses are adopted. This latter estimate was calculated by multiplying the average annual estimates by a factor of 18.25 based on standard cash flow calculation methodologies assuming a 5% interest rate.

Table 3-5
Estimated Flood Damage Loss in Decatur

Stream	Estimated Average Annual Damage based on 1992 Values ($)	Estimated Average Annual Damage based on 2005 Values ($)	Estimated Average Annual Total Economic Loss ($)	Estimated Present Worth of Losses that can be Prevented ($)
St. Mary's River	$114,530	$217,607	$435,214	$7,942,656

As Table 3-5 indicates, the average annual total economic loss as a result of flooding in Decatur is expected to be approximately $435,000, with a present worth value estimated at about $8 million based on a 50-year planning period/project life.

Study Region 2: Remaining Area of Adams County

As part of this planning process, the GIS-based HAZUS-MH Flood Model was used along with the most recent GIS information to simulate a 100 and 500-year flood event for stream reaches within Adams County that were outside Decatur (region 1). The HAZUS-MH Flood Model estimates that a 100-year event would result in approximately $16.68 million in total economic loss, $10.27 million of which would be in building loss in these areas. Based on the HAZUS-MH estimates, 52 buildings (4 critical facilities) will be damaged as a result of a 100-year flood within the Region 2, with 98% of the buildings exposed to flood damage being residential. For the

500-year flood, the total economic loss was estimated by HAZUS-MH to be approximately $18.06 million for this region. The number of buildings damaged was estimated to be 58, of which 57 were residential. HAZUS-MH also estimated that 4 critical facilities would be damaged within this region as a result of a 500-year flood event.

Exhibit 3 illustrates thematic results for total economic loss due to a 100-year flood event resulting from HAZUS-MH analysis of the entire County. Based on census block data, HAZUS-MH estimates that key areas in the City of Decatur will experience the greatest total economic loss. In addition to Decatur, HAZUS-MH also identified an area along Yellow Creek on the north side of the Town of Monroe that may potentially be subject to high flood damage. As no flooding complaints have been recorded in the past for this area, a closer look at the floodplain information in this area is necessary before such potential for significant flooding-related damages can be confirmed.

Since the HAZUS-MH Flood Model is still under development, the data generated should be used with some reservation. Subsequent releases may address the following limitations. Estimated losses for an individual building are actually averages for a group of similar buildings and although the buildings are similar, they may experience vastly different damage and losses during a flood. Replacement costs of schools and transportation facilities used in the HAZUS-MH analyses are derived from national data and may not accurately represent actual local conditions.

Repetitive Loss Properties

FEMA defines a repetitive loss structure as a structure, covered by a contract of flood insurance issued under the NFIP, that has suffered flood damage on two occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage, on average, equaled or exceeded 25% of the market value of the structure at the time of each flood loss. There only is 1 repetitive flood insurance loss recorded for Adams County in the City of Berne. The general location of this structure is shown on Exhibit 3.

Probability of a Future Event

The probability of a flood in Adams County is highly likely. The magnitude or severity of flooding in Adams County determines the extent to which there is substantial damage and/or disruption to homes, businesses, and transportation corridors. Through the accuracy of the National Weather Service, there can be as much as a 24-hour or greater warning time that a flood event will occur. However, the volume of water is often greater than prevention measures can withstand. In Adams County, the duration of a rain event or snowmelt that results in flood event has the potential to disrupt normal activities and businesses in the County for more than a week at a time.

Table 3-6 identifies the Calculated Priority Risk Index (CPRI) for a flood in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, is used to calculate CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-6
Calculated Priority Risk Index (CPRI) for Flooding

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Highly likely	Critical	12-24 hrs	> 1 wk	3.40
City of Berne	Possible	Limited	12-24 hrs	< 1 day	2.00
City of Decatur	Highly likely	Critical	12-24 hrs	> 1 wk	3.40
Town of Geneva	Highly likely	Critical	12-24 hrs	> 1 wk	3.40
Town of Monroe	Possible	Limited	12-24 hrs	< 1 day	2.00
Town of Preble	Possible	Limited	12-24 hrs	< 1 day	2.00

According to the CPRI, the probability of a flood in Adams County, the City of Decatur, and Town of Geneva is highly likely. Based on historical data and information provided by local planning and emergency management professionals, floods ranked 1st (of 7 hazards studied) of important hazards affecting Adams County.

Vulnerability Analysis

Based on the estimated number of buildings subject to flood damage in Decatur area (Region 1) as well as the HAZUS-MH analyses performed for Region 2, it is estimated that 475 people or 1.4% of the Adams County population could be at risk during a 100-year frequency flood event. The total potential building loss due to flooding in Adams County is estimated to be $172 million (critical and non-critical structure damage combined). For the purpose of vulnerability analysis, the total potential loss to buildings vulnerable to flood was calculated by multiplying the number of buildings by the estimated replacement value available in the HAZUS-MH database. Replacement value was determined using national averages for both structure and content replacement.

According to HAZUS-MH, the Flood Model predicted that a 500-year flood event would result in an additional $ 1million in building losses for Adams County.

Four percent of all critical facilities, or 4 critical facilities, in Adams County could be at risk. Less than 1% of all non-critical structures, or 22 non-critical facilities in Adams County could be at risk. **Appendix 5** lists the number of critical facilities, the total number of buildings, and estimates the value of those buildings exposed to a flood.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

3.2.2 SEVERE WINTER STORM

A winter storm can range from moderate snow over a few hours to blizzard conditions with high winds, ice storms, freezing rain or sleet, heavy snowfall with blinding wind-driven snow, and extremely cold temperatures that lasts several days. Some winter storms may be large enough to affect several states while others may affect only a single community. All winter storms are accompanied by cold temperatures and blowing snow, which can severely reduce visibility. A severe winter storm is one that drops 4 or more inches of snow during a 12-hour period, or 6 or more inches during a 24-hour span. An ice storm occurs when freezing rainfalls from clouds and freezes immediately on impact. All winter storms make driving and walking extremely hazardous. The aftermath of a winter storm can affect a community or region for days, weeks, and even months.

Storm effects such as extreme cold, flooding, and snow accumulation can cause hazardous conditions and hidden problems for people in the affected area. People can become stranded on the road or trapped at home, without utilities or other services. Residents, travelers, and livestock may become isolated or stranded without adequate food, water, and fuel supplies. The conditions may overwhelm the capabilities of a local jurisdiction. Winter storms are considered deceptive killers as they indirectly cause transportation accidents, and injury and death resulting from exhaustion/overexertion, hypothermia and frostbite from wind chill, and asphyxiation; house fires occur more frequently in the winter due to lack of proper safety precautions.

"Wind chill" is a calculation of how cold it feels outside when the effects of temperature and wind speed are combined. On November 1, 2001, the National Weather Service (NWS) implemented a replacement Wind Chill Temperature (WCT) index for the 2001/2002 winter season. The reason for the change was to improve upon the current WCT Index, which was based on the 1945 Siple and Passel Index. A winter storm watch indicates that severe winter weather may affect your area. A winter storm warning indicates that severe winter weather conditions are definitely on the way. A blizzard warning means that large amounts of falling or blowing snow and sustained winds of at least 35 miles-per-hour are expected for several hours.

Previous Occurrences

There have been a number of severe winter storms recorded in Adams County. The NCDC has recorded 1 extreme cold, 6 heavy snow, and 4 winter storm events since February 1994. **Table 3-7** illustrates the historical winter storm data collected by NCDC. The Comprehensive Hazard Analysis for Adams County identifies 3 significant severe winter storm events. A two-day snow and ice storm in January 1979 stopped all activity in Adams County and the rest of Indiana for two weeks and caused 9 deaths. A third event in December 1999 brought severe winter storm conditions of combined heavy snow and ice to north-central, central, and south-central Indiana, and resulted in a Federal Disaster Declaration.

Table 3-7
Historical Severe Winter Storm Data

Location	Date	Type	Magnitude	Death/ Injury	Property Damage
County +	2-25-94	HeavySnow/BlowingSnow	NA	0/0	$0
County +	12-8-95	Winter Storm	NA	0/0	$0
County +	12-18-95	Winter Storm	NA	0/0	$0
County +	1-2-96	Winter Storm	NA	0/0	$0
County +	1-2-99	Heavy Snow	NA	0/0	$0
County +	3-11-00	Heavy Snow	NA	0/0	$0
County +	12-13-00	Heavy Snow	NA	0/0	$0
County +	12-24-02	Heavy Snow	NA	0/0	$0
County +	2-22-03	Heavy Snow	NA	0/0	$0
County +	1-26-04	Winter Storm	NA	0/0	$0

TOTAL				0/0	$0

Note: "County+" denotes that more than Adams County was affected; NA indicates information was not available. (Source: NCDC, 2005)

Geographic Location

The impact of a severe winter storm affects areas regionally, over several counties or States, rather than affecting an isolated area within a single county.

Hazard Extent

Severe winter storms including freezing rain, sleet, heavy snow, blizzards, icy conditions, extreme low temperatures, and strong winds are common during the winter months in Adams County. Such conditions can result in substantial personal and property damage.

Probability of Future Event

The probability of a severe winter storm causing disruption to residents and businesses in Adams County is likely with a magnitude and/or severity that can affect the entire county. Although the warning time associated with severe winter storms is typically 12-24 hours, the duration of the event could last for more than 1 week.

Table 3-8 identifies the Calculated Priority Risk Index (CPRI) for a severe winter storm in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, is used to calculate CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-8
Calculated Priority Risk Index (CPRI) for Severe Winter Storm

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Likely	Limited	12-24 hrs	> 1 wk	2.65
City of Berne	Likely	Limited	12-24 hrs	> 1 wk	2.65
City of Decatur	Likely	Limited	12-24 hrs	> 1 wk	2.65
Town of Geneva	Likely	Limited	12-24 hrs	> 1 wk	2.65
Town of Monroe	Likely	Limited	12-24 hrs	> 1 wk	2.65
Town of Preble	Likely	Limited	12-24 hrs	> 1 wk	2.65

According to the CPRI, no one community seems to be affected more than another by a severe winter storm.

Based on the historical data and knowledge among local planning and emergency management professionals, severe winter storms ranked 2nd (of 7 hazards studied) in order of most important hazards affecting Adams County.

Vulnerability Analysis
Predicting which communities are at risk during a severe winter storm is difficult; therefore, the entire population of Adams County has been identified. Total loss to buildings was calculated by multiplying the number of buildings by the estimated replacement value available in the HAZUS-MH database. Replacement value was determined using national averages for both structure and content replacement.

One hundred percent or 97 critical facilities in Adams County could be at risk and 100% or 9,588 non-critical facilities in Adams County could be at risk. **Appendix 5** lists the number of critical facilities, the total number of buildings and estimates the value of those buildings exposed to severe winter storms and extreme cold.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

3.2.3 TORNADO/WIND STORM

Tornadoes are defined as violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground. However, the violently rotating column of air may reach the ground very quickly – becoming a tornado. If there is debris, being picked up or blown around by the "funnel cloud," then it has reached the ground and it is considered a tornado event.

A tornado is spawned by a thunderstorm, which is produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado season is generally March through June in Indiana, although tornadoes can occur at any time of year. They tend to occur in the afternoons and evenings: over 80 percent of all tornadoes strike between 3 PM and 9 PM, but can occur at any time of day or night. Tornadoes occur most frequently in the United States east of the Rocky Mountains.

While most tornadoes (69%) have winds of less than 100 miles per hour, they can be much stronger. Although violent tornadoes (winds greater than 205 mph) account for only 2% of all tornadoes, they cause 70% of all tornado deaths. In 1931, a tornado in Minnesota lifted an 83-ton railroad train with 117 passengers and carried it more than 80 feet. In another instance, a tornado in Oklahoma carried a motel sign 30 miles and dropped it in Arkansas. In 1975, a Mississippi tornado carried a home freezer more than a mile.

Windstorms or high winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds (high or low-pressure systems). High winds are speeds reaching 50 mph or greater, either sustaining or gusting.

Previous Occurrences
Fifteen tornadoes and 61 windstorms have been recorded in Adams County since March 1953. Significant windstorm events are characterized by top wind speeds achieved during the event. Tornadoes, on the other hand, are often classified using the Fujita Scale of tornado intensity. Tornado intensity ranges from low intensity (F0) tornadoes with effective wind speeds of 40-70 miles-per-hour (mph) to high intensity (F5+) tornadoes with effective wind speeds of 261 to over 318 mph. Tornadoes recorded for Adams County include 3 - **F0**, 8 - **F1**, 2 - **F2**, 1 - **F3**, and 1 -

F4 tornadoes and windstorms with recorded magnitudes ranging from 50 knots (57.5 mph) to 61 knots (70.2 mph). **Table 3-9** and **Table 3-10** summarize the historical tornado and windstorm data available from the NCDC. Indiana's "tornado season" is typically from March through June.

Table 3-9
Historical Tornado Data

Location	Date	Magnitude	Death/Injury	Property Damage
County	3/18/1953	F1	0/0	$25,000
County	4/11/1965	F4	1/37	$25,000,000
County	5/26/1965	F0	0/0	$25,000
County	12/21/1967	F0	0/0	$0
County	5/14/1970	F1	0/0	$250,000
County	7/15/1976	F0	0/0	$0
County	6/2/1980	F1	0/3	$250,000
County	3/16/1993	F1	0/0	$250,000
County	6/28/1983	F1	0/0	$0
County	7/12/1986	F1	0/0	$3,000
County	8/26/1986	F2	0/2	$2,500,000
County	5/25/1989	F1	0/0	$25,000
County	7/2/1992	F2	0/0	$250,000
County	7/12/1992	F1	0/0	$250,000
Berne	11/11/2002	F3	0/0	$125,000
Totals			**1/42**	**$28,953,000**

(Source: NCDC, 2005)

Table 3-10
Historical Wind Storm Data

Location	Date	Magnitude (knots)	Magnitude (mph)	Death/ Injury	Property Damage
County	7-13-66	NA	NA	0/0	$0
County	7-5-80	NA	NA	0/0	$0
County	4-3-82	NA	NA	0/0	$0
County	7-19-83	NA	NA	0/0	$0
County	9-6-83	NA	NA	0/0	$0
County	5-6-86	NA	NA	0/0	$0
County	3-27-91	NA	NA	0/0	$0
County	5-17-91	NA	NA	0/0	$0
County	6-17-92	NA	NA	0/0	$0
County	6-17-92	NA	NA	0/0	$0
County	4-27-94	NA	NA	0/0	$0
County	5-23-94	NA	NA	0/0	$0
County	11-21-94	NA	NA	0/0	$0
County	11-27-94	NA	NA	0/0	$0
County	1-18-96	NA	NA	0/0	$0
County	3-25-96	NA	NA	0/0	$0
County	4-19-96	NA	NA	0/0	$0
County	7/25/1956	NA	NA	0/0	$5,000
County	7/4/1957	NA	NA	0/0	$5,000

County	7/12/1966	NA	NA	0/0	$50,000
County	4/20/1968	NA	NA	0/0	$50,000
County	6/20/74	NA	NA	0/0	$50,000
County	1/11/1980	NA	NA	0/0	$120,000
County	7/2/1980	NA	NA	0/0	$4,000
County	8/29/1980	60	69.05	0/0	$0
Decatur	6/15/1982	60	69.05	0/0	$0
Preble	6/13/1984	51	58.69	0/0	$0
Monroe	5/6/1986	56	64.44	0/0	$0
Decatur	7/11/1986	50	57.54	0/0	$0
Monroe	11/10/1988	NA	NA	0/0	$30,000
Berne	7/2/1992	52	59.84	0/0	$100,000
Decatur	7/8/1991	52	59.84	0/0	$0
Decatur	6/17/1992	52	59.84	0/0	$0
Decatur	7/2/1992	NA	NA	0/0	$10,000
Decatur	4/15/1993	NA	NA	0/0	$30,000
Decatur	4/15/1993	NA	NA	0/0	$1,000
Decatur	6/16/1994	NA	NA	0/1	$0
Monroe	6/17/1994	NA	NA	0/0	$0
Decatur	11/21/1994	NA	NA	0/0	$15,000
Decatur	11/27/1994	NA	NA	0/0	$0
Berne	6/7/1995	NA	NA	0/0	$0
Decatur	7/30/1996	NA	NA	0/0	$25,000
Decatur	7/2/1997	NA	NA	0/0	$0
Decatur	4/8/1998	60	69.05	0/0	$0
Decatur	5/19/1998	NA	NA	0/0	$0
County	5/29/1998	55	63.29	0/0	$0
Berne	6/11/1998	NA	NA	0/0	$0
Decatur	6/19/1998	NA	NA	0/0	$0
Monroe	6/26/1998	NA	NA	0/0	$0
Decatur	7/19/1998	NA	NA	0/0	$0
Decatur	11/10/1998	50	57.54	0/0	$0
Berne	12/6/1998	50	57.54	0/0	$0
Geneva	7/9/1999	50	57.54	0/0	$0
Monroe	5/9/2000	50	57.54	0/0	$0
Monroe	5/9/2000	52	59.84	0/0	$0
County	5/9/2000	56	64.44	0/0	$50,000
County	5/9/2000	52	59.84	0/0	$0
Preble	7/21/2001	50	57.54	0/0	$0
Decatur	8/18/2001	51	58.69	0/0	$0
TOTAL				**0/0**	**$545,000**

(Source: NCDC, 2005)

Geographic Location

Tornados in Indiana generally come from the south through the west and move to the north through the east. In Adams County, the predominant tornado path seems to be from the southwest to the northeast, though there is one instance in Preble Township where a tornado path traveled from east to west. Several tornados have been recorded in Blue Creek (4), Preble

(5), Monroe (2), Wabash (2), Hartford (2), Kirkland (1), Union (1), St. Mary's (1), Washington (1), and Root (3) Townships. The City of Decatur, Town of Berne, and Town of Preble have all experienced a tornado event in the past. **Exhibit 4** illustrates the historical tornado activity in Adams County.

There are 13 tornado sirens in Adams County as shown on Exhibit 4. The majority of the tornado sirens are located in the central part of the County. There are 6 sirens in the City of Decatur, 3 sirens in the Town of Berne, 2 sirens in the Town of Geneva, 1 siren in the Town of Monroe, and 1 siren in the Town of Preble.

<u>Hazard Extent</u>
According to the NCDC, the most significant tornado in Adams County was an F4 event on 11 April 1965, and was responsible for 6 deaths, 30 injuries, and $25 million in property damage.

Outdoor warning sirens are necessary to warn the population of possible tornado or windstorm activity. The Towns of Preble and Monroe each have a single siren and the City of Decatur has 6 sirens that cover the urbanized area and the majority of the critical facilities within its corporate limits. However, there are 3 schools, 3 airports, 2 hazardous materials sites, a power plant, and a dam that are not covered by tornado warning sirens in the Preble, Root, and Union Townships. Additionally, there are 12 schools, a hospital, an airport, and a dam that are not covered by a tornado warning sirens in the central townships of Kirkland, Washington, St. Mary's, French, Monroe, and Blue Creek. In the southern portion of the county, the City of Berne has 3 sirens that cover the entire corporate limits of that community. However, there are 15 schools, a power station, and a hospital not covered by tornado warning sirens in the Hartford, Wabash, and Jefferson Townships.

<u>Probability of Future Event</u>
The probability of a tornado event in Adams County is possible. The warning time of a tornado or windstorm is limited and may be as little as only a few hours. The duration of a tornado or windstorm event is relatively short as well. However, the magnitude or severity of the hazard can be significant.

Table 3-11 identifies the Calculated Priority Risk Index (CPRI) for a tornado and/or windstorm in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, is used to calculate CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-11
Calculated Priority Risk Index (CPRI) for Tornado/Wind Storm

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Possible	Limited	< 6 hrs	< 6 hrs	2.20
City of Berne	Possible	Limited	< 6 hrs	< 6 hrs	2.20
City of Decatur	Possible	Limited	< 6 hrs	< 6 hrs	2.20
Town of Geneva	Possible	Limited	< 6 hrs	< 6 hrs	2.20
Town of Monroe	Possible	Limited	< 6 hrs	< 6 hrs	2.20
Town of Preble	Possible	Limited	< 6 hrs	< 6 hrs	2.20

According to the CPRI, the probability of a tornado or windstorm event is equal for all communities.

Based on the historical data and knowledge among local planning and emergency management professionals, tornadoes and windstorms ranked 3rd (of 7 hazards studied) in order of most important hazards affecting Adams County.

Vulnerability Analysis

Because of the difficulty predicting which communities are at risk during a tornado/windstorm, the entire population of Adams County has been identified. Total loss to buildings was calculated by multiplying the number of buildings by the estimated replacement value available in the HAZUS-MH database. Replacement value was determined using national averages for both structure and content replacement.

One hundred percent or 97 critical facilities in Adams County could be at risk and 100% or 9,588 non-critical facilities in Adams County could be at risk. **Appendix 5** lists the number of critical facilities, the total number of buildings and estimates the value of those buildings exposed to a tornado/windstorm.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

3.2.4 STORAGE AND TRANSPORT OF HAZARDOUS MATERIALS

An explosion is the sudden release of energy and rapidly expanding volume of gas that occurs when a combustible and volatile source ignites. Some common volatile products that may be present in a community include petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. While an explosion may cause death, injury and property damage, a fire routinely follows which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials response units.

Previous Occurrences
According to the Adams County Comprehensive Hazard Analysis, there has not been a significant large-scale hazardous material incident in Adams County in the past. Local firefighters, hazardous material teams, emergency management, and local law enforcement have dealt with a number of minor hazardous material releases. **Table 3-12** lists some of the past significant minor hazardous materials events in Adams County. There have been numerous other small spills, mostly of petroleum products; however, they are too many to list in detail.

Table 3-12
Significant Minor Hazardous Material Events

Date	Location	Comments
9-3-00	10451 N 550 W.	• Manure runoff causes small fish kill
7-6-01	400 N/400 W	• Fish kill from excess nitrogen in creek
8-26-02	100 N & 27	• Approximately 70 gal. of diesel and oil spill into creek
5-19-03	City of Berne	• Dry weather discharge at CSO #6 into Sprunger Ditch

(Source: Adams County Comprehensive Hazard Analysis, 2003)

Geographic Location
According to the IDEM Office of Land Quality, there are 89 Hazardous Waste Notifiers, 74 leaking underground storage tanks and 314 underground storage tanks in Adams County. The Hazardous Waste Notifiers database includes:

- 9 large quantity generators of hazardous waste
- 11 small quantity generators of hazardous waste
- 27 conditional exempt generators of hazardous waste
- 38 no longer a generator
- 3 transporters of hazardous waste
- 1 closed treatment, storage, disposal facility

Also identified by the IDEM Office of Land Quality, are 314 underground storage tanks (UST) and 25 leaking underground storage tanks (LUST). **Table 3-13** lists the communities where these tanks are located.

Table 3-13
Underground Storage Tanks

	Underground Storage Tanks (UST)	Leaking Underground Storage Tanks (LUST)
Adams County	14	-
City of Berne	54	4
City of Decatur	190	18
Town of Geneva	15	-
Town of Monroe	36	3
Town of Preble	-	-

(Source: IDEM Office of Land Quality, 2004)

Several U.S. Highways and three rail corridors intersect and join the communities of Adams County. These routes do provide a means to transport hazardous materials. U.S. 224 travels through the City of Decatur, US 27 through the Town Geneva, Berne, and the City of Decatur.

State Road 124 passes through the Town of Monroe. State Road 116 passes through Geneva and U.S. Highway 33 travels through Decatur. A rail line from the City of Fort Wayne terminates in the City of Decatur. **Exhibit 5** illustrates hazardous material sites, underground storage tanks (UST), and leaking underground storage tanks (LUST) as well as major transportation corridors in Adams County.

Hazard Extent

The definition of significant large-scale hazardous material event is one that results in multiple deaths or serious injuries. There are hundreds of facilities throughout Adams County that store or transport extremely hazardous substances; each one is subject to the Superfund Amendments and Reauthorization Ace (SARA) Title III requirements, which require the Adams County Local Emergency Planning Committee (LEPC) to provide for emergency planning, reporting, and training necessary to minimize the impact of hazardous materials in the county.

Probability of Future Event

Although the probability of a major hazardous material event is possible, based on the efforts of the Adams County LEPC and past occurrences, it is unlikely that one will occur.

Table 3-14 identifies the Calculated Priority Risk Index (CPRI) for the storage and transport of hazardous materials in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, calculates the CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-14
Calculated Priority Risk Index (CPRI) for Hazardous Material

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Possible	Limited	< 6 hrs	< 1 day	2.30
City of Berne	Possible	Limited	< 6 hrs	< 1 day	2.30
City of Decatur	Possible	Limited	< 6 hrs	< 1 day	2.30
Town of Geneva	Possible	Limited	< 6 hrs	< 1 day	2.30
Town of Monroe	Possible	Limited	< 6 hrs	< 1 day	2.30
Town of Preble	Unlikely	Negligible	< 6 hrs	< 1 day	1.55

According to the CPRI, Adams County, the City of Decatur, City of Berne, Town of Geneva, and the Town of Monroe are more vulnerable to the storage and transportation of hazardous materials since there are more facilities located in these communities. Because of the efforts of the Adams County LEPC, storage, handling, and transport requirements, the magnitude of a hazardous material event would be negligible to limited. If a hazardous material hazard were to occur, both the warning time and duration of event would be relatively short.

Based on the historical data and knowledge among local planning and emergency management professionals, the storage and transport of hazardous materials ranked 4th (of 7 hazards studied) in order of most important hazards affecting Adams County.

Vulnerability Analysis

Predicting which specific communities have a greater risk by the storage and transport of hazardous materials than other communities is problematic; therefore, a conservative approach is to consider the entire population of Adams County (33,592) equally vulnerable to the hazard. Although the majority of the hazardous material facilities are located in the City of Decatur, City of Berne, Town of Geneva, and Town of Monroe, several major transportation routes run throughout the County and can be used for transporting hazardous materials. These routes include U.S. 27, U.S. 224, S.R. 124, S.R. 116, U.S. Highway 33 and 1 railroad. Thus, the entire County is exposed to the potential hazard. Total loss to buildings was calculated by multiplying the number of buildings by the estimated replacement value available in the HAZUS-MH database. Replacement value was determined using national averages for both structure and content replacement.

One hundred percent or 97 critical facilities in Adams County could be at risk and 100% or 9,588 non-critical facilities in Adams County could be at risk. **Appendix 5** lists the number of critical facilities, the total number of buildings and estimates the value of those buildings exposed to hazardous materials.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

3.2.5 UTILITY FAILURE

The definition of a power/utility failure is an actual or potential shortage of electric power or the interruption of electrical power, which significantly threatens health and safety. Many communities are vulnerable to many localized, short- and long-term energy emergencies. Power shortages and failures can be caused by severe weather conditions, including: blizzards, ice storms, extreme heat, thunderstorms, or by events such as war, and civil disturbance.

Previous Occurrences

Although isolated areas throughout Adams County have been affected by temporary utility failures, there has not been a significant utility failure reported for the County.

Geographic Location

Several utility providers service Adams County. Indiana – Michigan Power and Jay County REMC provide electric service, Northern Indiana Public Service Company (NIPSCO) provides natural gas, and SBC and Sprint provide telecommunications services. Several of the NFIP communities provide their own water and sewer treatment.

Hazard Extent

A utility failure during periods of extreme heat and extreme cold could result in loss of life. Regardless of time of year or temperature, a utility failure in Adams County could have significant economic impacts. Depending on the type of utility failure, major employers, medical facilities, schools, and government centers would not be able to operate at full capacity even with a back up system.

Probability of a Future Event

Based on previous occurrences and local knowledge of the utility network in Adams County, the probability of a major utility failure is unlikely. However, because parts of Adams County are heavily populated, the magnitude or severity of a utility failure could be critical. Should a utility failure occur, the warning time would be short and duration could last as long as a week.

Table 3-15 identifies the Calculated Priority Risk Index (CPRI) for utility failure in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, is used to calculate CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-15
Calculated Priority Risk Index (CPRI) for Utility Failure

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Unlikely	Limited	< 6 hrs	< 1 wk	1.85
City of Berne	Unlikely	Critical	< 6 hrs	< 1 wk	2.15
City of Decatur	Unlikely	Critical	< 6 hrs	< 1 wk	2.15
Town of Geneva	Unlikely	Critical	< 6 hrs	< 1 wk	2.15
Town of Monroe	Unlikely	Critical	< 6 hrs	< 1 wk	2.15
Town of Preble	Unlikely	Critical	< 6 hrs	< 1 wk	2.15

According to the CPRI, the probability of a utility failure is unlikely. The magnitude or severity would be limited throughout most of Adams County; however, the impact of a utility failure would be critical in the more urbanized areas including the City of Decatur, City of Berne, Town of Geneva, Town of Monroe, and the Town of Preble. The warning time of a utility failure would be very short and the duration of the event may last up to one week.

Based on the historical data and knowledge among local planning and emergency management professionals, a utility failure ranked 5th (of 7 hazards studied) in order of most important hazards affecting Adams County.

Vulnerability Analysis

Because of the difficulty predicting which communities are at risk as a result of a utility failure, the entire population of Adams County (33,592) has been identified. Total loss to buildings was calculated by multiplying the number of buildings by the estimated replacement value available in the HAZUS-MH database. Replacement value was determined using national averages for both structure and content replacement.

One hundred percent or 97 critical facilities in Adams County could be at risk and 100% or 9,588 non-critical facilities in Adams County could be at risk. **Appendix 5** lists the number of critical facilities, the total number of buildings, and estimates the value of those buildings exposed to a utility failure.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

3.2.6 DAM FAILURE

The definition of a dam is a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams are constructed using earth, rock, concrete, or mine tailings. A dam failure is the collapse, breach, or other failure resulting in downstream flooding.

A dam impounds water in the upstream area, referred to as the reservoir. The amount of water impounded is measured in acre-feet. An acre-foot is the volume of water that covers an acre of land to a depth of one foot. As a function of upstream topography, even a very small dam may impound or detain many acre-feet of water. Two factors influence the potential severity of a full or partial dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream.

Of the approximately 80,000 dams identified nationwide in the National Inventory of Dams, the majority are privately owned. Federal agencies own 2,131; States own 3,627; local agencies own 12,078; public utilities own 1,626; and private entities or individuals own 43,656. Ownership of over 15,000 is undetermined. The Inventory categorizes the dams according to their primary function: Recreation (31%), Fire and farm ponds (17%), Flood control (15%), Irrigation (14%), Water supply (10%), Tailings and other (8%), Hydroelectric (3%), and Undetermined (2%).

Each dam in the National Inventory of Dams is assigned a downstream hazard classification based on the potential loss of life and damage to property should the dam fail. The three classifications are high, significant, and low. With changing demographics and land development in downstream areas, hazard classifications are updated continually. The hazard classification is not an indicator of the adequacy of a dam or its physical integrity. Dam failures typically occur when spillway capacity is inadequate and excess flow overtops the dam, or when internal erosion (piping) through the dam or foundation occurs. Dam failures can result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which causes most failures;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross section of the dam and abutments;
- Improper design, including the use of improper construction materials and construction practices;
- Negligent operation, including failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway;
- Landslides into reservoirs, which cause surges that result in overtopping;
- High winds, which can cause significant wave action and result in substantial erosion and Earthquakes, which typically cause longitudinal cracks at the tops of embankments that weaken entire structures.

The Indiana Department of Natural Resources (IDNR) currently classifies dams into one of three categories of hazard classification. A hazard classification is a rating (e.g., low, significant, or high hazard) that is representative of the probable loss of life and property damage downstream from a dam based on the best available information and visual observation of the dam, and/or an identification of the area downstream that would be inundated. The following definitions of hazard classification currently apply to dams in Indiana:

(1) **High hazard dam**: a structure the failure of which may cause the loss of life and serious damage to homes, industrial and commercial buildings, public utilities, major highways, or railroads.
(2) **Significant hazard dam**: a structure the failure of which may damage isolated homes and highways, or cause the temporary interruption of public utility services.
(3) **Low hazard dam**: a structure the failure of which may damage farm buildings, agricultural land, or local roads.

Previous Occurrences

There are no records or local knowledge of a dam failure to date in Adams County.

Geographic Location

Out of all dams in Adams County, 4 of the 5 dams are located on tributaries of the Wabash River; the 5th dam is located on a tributary of the St. Mary's River. **Exhibit 2** illustrates the geographical location of the dams in Adams County.

The Rainbow Lake Dam is located in the Town of Geneva and overflow from that dam enters a tributary of the Wabash River. The Myer Lake Dam is approximately 2 miles upstream of the community of Vera Cruz and outlets to a tributary of the Wabash River. The Lake of the Woods Dam is approximately 1 mile downstream from the Town of Geneva and empties into a tributary of the Wabash River. The Donnally Lake Dam is located in the community of Ceylon and outlets to a tributary of the Wabash River. Finally, the Saddle Lake Dam is located approximately 2 miles upstream from the City of Decatur and empties into a tributary of the St. Mary's River.

Hazard Extent

According to the IDNR, Division of Water, there are 5 dams in Adams County. One is classified as high hazard dam, one has a significant hazard potential, and the remaining 3 are considered low hazard dams. The dams range in height from a 13-foot earthen dam to a 16-foot earthen dam. All dams in Adams County are privately owned by individuals or Homeowners Associations (HOA) and are used primarily for recreation. Regular inspection and maintenance certified by a professional engineer is required for all high hazard dams in Indiana. According to IDNR and the National Inventory of Dams, none of these dams has an Emergency Action Plan assigned. The State of Indiana does not require an Emergency Action Plan for a dam at this time; however, it is one of the recommendations of the 2003 Indiana Dam Safety & Inspection Manual. **Table 3-16** summarizes the data collected from the National Inventory of Dams.

Table 3-16
Inventory of Dams

Name	Dam Type	Dam Height	Waterway (drainage area)	Downstream Community (distance)	Owner (type/ purpose)	Downstream hazard potential (Emergency Action Plan)
Saddle Lake (Cleme's) Dam	Earth	16 ft	Tri-St. Mary's River (0.23 sq mi))	Decatur (2 miles)	(private/ recreation)	High (no)
Lake of the Woods Dam	Earth	13 ft	Tri-Wabash River (0.26 sq mi))	Geneva (1 miles)	Lake of the Woods HOA (private/ recreation)	Significant (no)
Rainbow Lake Dam	Earth	15 ft	Tri-Wabash River (0.28 sq mi)	Geneva (0 miles)	Rainbow Lake HOA (private/ recreation)	Low (no)
Myer Lake Dam	Earth	15 ft	Tri-Wabash River (0.23 sq mi)	Vera Cruz (2 miles)	(private/ recreation)	Low (no)
Donnally Lake (Steenburg) Dam	Earth	16 ft	Tri-Wabash River (0.21 sq mi))	Ceylon (0 miles)	(private/ recreation & water supply)	Low (no)

(Source: National Inventory of Dams, 2004)

The Saddle Lake Dam classified by the IDNR as a high hazard dam because it has the potential to cause loss of life, economical, and environmental losses. Saddle Lake Dam is a 16-foot earth dam on a tributary of the St. Mary's River and is approximately 2 miles upstream from the City of Decatur (9,459 people). Kathy Thompson owns the dam and the water impounded behind the dam, the man-made impoundment is used as a source of recreation.

Additionally, Lake of the Woods Dam is classified as having a significant hazard potential. Failure or negligent operation of a significant hazard dam should not result in loss of life but can cause economical loss, environmental damage, and/or disruption of lifeline facilities. This dam is located upstream from the Town of Geneva (1,335 people) and is privately owned by the Lake of the Woods Homeowners Association (HOA).

The remaining 3 dams, Rainbow Lake Dam, Myer Lake Dam, and Donnally Lake Dam are classified as low hazard dams. Failure or negligent management of a low hazard dam should have no loss of life and limited economic or environmental losses. These dams are privately owned and used for recreation with the exception of Donnally Lake, which is also used as a water supply.

<u>Probability of a Future Event</u>
Considering operation and maintenance requirements, and local knowledge of the dams in Adams County, the probability of a dam failure is unlikely. However, if a high hazard dam such as the Saddle Lake Dam were to fail, the magnitude or severity of the damage could be critical. The proximity of this dam to urban community of Decatur increases the potential for loss of life

and significant economical and environmental resources. The warning time and duration of a dam failure are both considered very short.

Table 3-17 identifies the Calculated Priority Risk Index (CPRI) for dam failure in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, is used to calculate CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-17
Calculated Priority Risk Index (CPRI) for Dam Failure

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Unlikely	Limited	< 6 hrs	< 6 hrs	1.75
City of Berne	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
City of Decatur	Unlikely	Limited	< 6 hrs	< 6 hrs	1.75
Town of Geneva	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
Town of Monroe	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
Town of Preble	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45

According to the CPRI, dam failure is a concern for greater Adams County and the City of Decatur. Specifically, Saddle Lake Dam poses a potential hazard to the City of Decatur, and other dams are scattered throughout the county and could pose a local hazard should there be a dam failure event.

Based on the historical data and knowledge among local planning and emergency management professionals, dam failure ranked 6th (of 7 hazards studied) in order of most important hazards affecting Adams County.

<u>Vulnerability Analysis</u>
Without conducting a detailed dam break analysis, it is difficult to predict exactly what area would be affected following a dam failure. The City of Decatur is the only community directly downstream of a dam in Adams County. In order to estimate the losses due to a dam failure in Adams County, the following assumptions were made:

- the dam failure would occur during dry weather which is judged as more critical for the cases considered since the downstream floodplains would be able to accommodate increased flow;
- area of inundation was estimated based on judgment.

Based on these assumptions, approximately 5 residential structures would be affected in the event of a dam failure in Adams County. The total replacement cost for these structures is valued at $900,500. Total loss to buildings was calculated by multiplying the number of buildings by the estimated replacement value available in the HAZUS-MH database. Replacement value was determined using national averages for both structure and content replacement. These numbers will be adjusted in subsequent updates to the MHMP as more accurate dam inundation estimates become available as a result of proposed Emergency Action Plans.

All five dams and 5 non-critical residential structures, 3 below Saddle Lake Dam and 2 below the Lake of the Woods Dam could be affected by a dam failure. **Appendix 5** lists the total number of buildings and estimates the value of those buildings exposed to dam failure.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

3.2.7 EARTHQUAKE

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free, causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates.

Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can move off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths, injuries, and extensive property damage.

Earthquakes strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world. Estimates of losses from a future earthquake in the United States approach $200 billion.

There are 45 states and territories in the United States at moderate to very high risk from earthquakes, and they are located in every region of the country. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes—most located in uninhabited areas. The largest earthquakes felt in the United States were along the New Madrid Fault in Missouri, where a three-month long series of quakes from 1811 to 1812 included three quakes larger than a magnitude of 8 on the Richter scale. These earthquakes occur over the entire Eastern United States, with Missouri, Tennessee, Kentucky, Indiana, Illinois, Ohio, Alabama, Arkansas, and Mississippi experiencing the strongest ground shaking.

<u>Previous Occurrences</u>

Although there has not been a previous occurrence of an earthquake recorded in Adams County, it is possible that because of the County's proximity to the New Madrid fault line and

Fort Wayne Rift (Anna Rift) zone, the County could experience an earthquake or the aftershock of an earthquake at some point in the future. The most recent earthquake recorded in central Indiana was on September 12, 2004 in Shelbyville, Indiana. The earthquake recorded 3.6 on the Richter scale of earthquake intensity.

<u>Geographic Location</u>
Adams County is located on the periphery of the New Madrid Seismic Zone and parts of the eastern portion of the county are located in the Fort Wayne Rift zone. The GIS-based HAZUS-MH program and the most recent GIS information for Adams County were used to simulate an annualized loss for Adams County. According to the HAZUS-MH earthquake results, Root and Washington Townships as well as all areas of the City of Decatur would experience the greatest direct economic losses. **Exhibit 6** illustrates the HAZUS-MH earthquake results.

<u>Hazard Extent</u>
According to the Adams County Comprehensive Hazard Analysis, the most significant earthquakes affecting the State of Indiana and Adams County were from a series of events known as the Great New Madrid Earthquakes of 1811-1812. The three largest earthquakes that were part of that series are believed to be greater than a magnitude of 8.0 on the Richter scale, with hundreds of aftershocks in various magnitude ranges. The most significant damage was in the New Madrid Seismic Zone in Southern Illinois.

The HAZUS-MH Earthquake Model averages 8 probabilistic scenarios including the 100, 250, 500, 750, 1000, 1500, 2000, and 2500-year earthquake events. This is known as an Annualized Loss. The HAZUS-MH Earthquake Model estimates that approximately 1% of all buildings are susceptible to earthquake damage, where 96 residential households could experience slight damage, and 15 households could experience moderate damage.

According to the HAZUS-MH Earthquake Model results, Root and Washington Townships as well as nearly all of the City of Decatur would experience the greatest direct economic losses. HAZUS-MH defines direct economic loss as the cost of repair and replacement of damaged or destroyed buildings and transportation systems as well as the cost associated with a facility or transportation system that is non-operational. Approximately 28% of the County's population and a significant number of critical facilities for Adams County are located in the highest damage potential area identified by the HAZUS-MH Earthquake Model.

Since the HAZUS-MH Earthquake Model is still under development, the data generated should be used with some reservation. Estimated losses for an individual building are actually averages for a group of similar buildings and although the buildings are similar, they may experience vastly different damage and losses during an earthquake. The damage estimated for small earthquakes (less than M6.0) centered within an urban region tend to be overestimated. Future releases may address these limitations.

<u>Probability of Future Event</u>
Based on historical earthquake data, local knowledge of previous earthquake events, and the HAZUS-MH results conducted as part of this planning process, the probability of an earthquake occurring in Adams County is unlikely. However, because parts of Adams County are moderately populated, the magnitude or severity of an earthquake event could be significant. Should an earthquake event occur, the warning time prior to and duration of the earthquake would both be relatively short.

Table 3-18 identifies the Calculated Priority Risk Index (CPRI) for an earthquake event in Adams County. To determine the CPRI, a value of 1 through 4 is assigned to the categories for probability (unlikely – highly likely), magnitude/severity (negligible – catastrophic), warning time (more than 24 hrs – less than 6 hours), and duration of event (less than 6 hours – greater than 1 week). The following formula, adopted from MitigationPlan.com, is used to calculate CPRI:

CPRI = Probability X 0.45 + Magnitude/Severity X 0.30 + Warning Time X 0.15 + Duration of Event X 0.10.

Table 3-18
Calculated Priority Risk Index (CPRI) for Earthquake

	Probability • Unlikely • Possible • Likely • Highly likely	**Magnitude/ Severity** • Negligible • Limited • Critical • Catastrophic	**Warning Time** • > 24 hrs • 12-24 hrs • 6-12 hrs • < 6 hrs	**Duration of Event** • < 6 hrs • < 1 day • < 1 wk • > 1 wk	**CPRI**
Adams County	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
City of Berne	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
City of Decatur	Unlikely	Critical	< 6 hrs	< 6 hrs	2.05
Town of Geneva	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
Town of Monroe	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45
Town of Preble	Unlikely	Negligible	< 6 hrs	< 6 hrs	1.45

Based on historical earthquake information and the HAZUS-MH earthquake results, the CPRI for an earthquake event indicates a priority for the City of Decatur. Approximately 28% of the County's population and a significant number of critical facilities for Adams County are located in or near this community.

Based on the historical data, HAZUS-MH Earthquake Model, and the knowledge among local planning and emergency management professionals, earthquake ranked 7th (of 7 hazards studied) in order of most important hazards affecting Adams County.

Vulnerability Analysis

Because of the difficulty predicting which communities are at risk during an earthquake, the entire population of Adams County has been identified. The HAZUS-MH Earthquake Model was used to estimate potential losses in Adams County. Replacement value was determined using national averages for both structure and content replacement.

Total economic losses are estimated at $230,000 for building and lifeline related losses. **Appendix 5** lists the number of critical facilities, the total number of buildings, and estimates the value of those buildings exposed to an earthquake event.

According to the US Census, the 2010 population of Adams County is not expected to change dramatically. It is therefore unclear whether there is, or will be, a need for additional critical and non-critical facilities in the near future.

NFIP/CRS

The CRS program credits NFIP communities a maximum of 55 points for mapping flooding as well as other known natural hazards; summarizing the impact of natural hazards; identifying the number, type, and estimated value of buildings subject to natural hazards; and development, redevelopment, and population trends in the community.

4.0 COMMUNITY CAPABILITY ASSESSMENT

This Section provides an inventory of existing mitigation efforts in Adams County. The capability assessment identifies what is currently being done, what is working well, and where gaps may exist to mitigate the impacts of hazards.

4.1 NFIP PARTICIPATION

Adams County, City of Berne, City of Decatur, and Town of Geneva are members of the National Flood Insurance Program (NFIP). Also participating in the development this Plan are non-NFIP communities including the Town of Preble and the Town of Monroe. **Table 4-1** lists each participant's NFIP number and the date they joined the program. The City of Decatur has participated in the NFIP Community Ratings System (CRS) program since 10 October 1993. The City of Decatur is a class 9 community and all residents and business-owners in special flood hazard areas receive a discount of 5% on their flood insurance premiums.

As a result of this planning process, several other NFIP communities in Adams County have expressed an interest in joining the CRS program and use of this Plan to assist them to achieve CRS status.

Table 4-1
NFIP Participation

	NFIP Number	Join Date	CRS Effective Date
Adams County	180424	8/3/1981	NA
City of Berne	180485	10/9/1981	NA
City of Decatur	180001	7/2/1981	10/1/1993
Town of Geneva	180002	11/1/1984	NA

(Source: FEMA, 2004)

4.2 FLOOD INSURANCE CLAIMS

According to the NFIP Insurance Report for Indiana, there have been 91 flood insurance claims processed since 1978 in Adams County. Seventy-five percent, or 69 flood insurance claims were in the City of Decatur, 13 in Adams County, 6 in the City of Berne, and 3 in the Town of Geneva.

4.2 EXISTING PLANS, PROGRAMS, AND PROJECTS

To facilitate the discussion, the Planning Committee discussed existing mitigation plans, programs, and projects in terms of the six mitigation measures used by FEMA – prevention, property protection, natural resource protection, emergency services, structural control projects, and public information.

Prevention

FEMA defines prevention as measures that are designed to keep the problem from occurring or getting worse. Adams County and participating NFIP communities currently have long-range planning, zoning, and subdivision control ordinances that guide or restrict development from known hazardous areas.

Property Protection

FEMA defines property protection as measures that are used to modify buildings subject to hazard damage rather than to keep the hazard away. The Maumee River Basin Commission

(MRBC), with cooperation from affected communities, works to acquire, relocate, elevate, and/or flood proof structures in flood zone areas through the National Flood Insurance Program.

Natural Resource Protection
FEMA defines natural resource protection as opportunities to preserve and restore natural areas and their function to reduce the impact of hazards. Adams County SWCD encourages agricultural landowners to implement filter strips along drainage ditches and setbacks along natural waterways. The City of Berne is in the process of separating their combined sewer system.

Emergency Services
FEMA defines emergency services as measures that protect people during and after a hazard. Adams County has a countywide outdoor warning siren system; however, there is a need for additional sirens. Weather systems are monitored by the EMA's office in cooperation with the SEMA using the National Weather Service. The Adams Memorial Hospital and all schools use weather radios to monitor weather systems. The Adams County Sheriffs utilizes a central dispatch warning that is broadcast to scanners, police, and fire radios. The USGS monitoring gages, field observation by residents, and vigilant attention of local government staff help to monitor continuous changes in water levels on important waterways in Adams County. Local TV and radio also carry weather warnings and advisories.

Structural Control Projects
FEMA defines structural control projects as physical measures used to prevent hazards from reaching a property. Adams County resizes culverts and bridges as resources allow. Adams County and participating communities have stormwater detention/retention sizing requirements for new development.

Public Information
FEMA defines public information activities as those that advise property owners, potential property owners, and visitors about the hazards, as well as ways to protect themselves and their property from the hazards. There are several education and training programs throughout the County. These include school programs, SWCD programs, service groups, and media outlets (TV, radio, newspaper).

NFIP/CRS

The CRS program credits NFIP communities a maximum of 30 points for reviewing and evaluating the effectiveness of existing activities as they relate to prevention, property protection, protection of natural resources, emergency services, structural control projects, and public information for flooding and other known natural hazards.

5.0 MITIGATION GOALS AND PROJECTS

This Section identifies the mitigation goals and projects identified by the MHMP Planning Committee.

5.1 MITIGATION GOALS

To facilitate the discussion, the Planning Committee prepared mitigation goals in terms of the six mitigation measures used by FEMA – prevention, property protection, natural resource protection, emergency services, structural control projects, and public information.

PREVENTION
FEMA defines prevention as measures that are designed to keep the problem from occurring or getting worse. The multi-hazard goal for prevention for Adams County and NFIP communities is to continue to manage the development of land and buildings to reduce the impact of hazards on people and property.

PROPERTY PROTECTION
FEMA defines property protection as measures that are used to modify buildings subject to hazard damage rather than to keep the hazard away. The multi-hazard goal for property protection for Adams County and NFIP communities is to modify the buildings subject to hazard damage to protect people and property from the impacts of hazards.

NATURAL RESOURCE PROTECTION
FEMA defines natural resource protection as opportunities to preserve and restore natural areas and their function to reduce the impact of hazards. The multi-hazard goal for natural resource protection for Adams County and NFIP communities is to preserve and maintain the function of existing natural resources to reduce the impact of hazards to people and property.

EMERGENCY SERVICES
FEMA defines emergency services as measures that protect people during and after a hazard. The multi-hazard goal for emergency services for Adams County and NFIP communities is to improve the efficiency, timing and effectiveness of warning, as well as response and recovery efforts before, during, and after a hazard.

STRUCTURAL CONTROL PROJECTS
FEMA defines structural control projects as physical measures used to prevent hazards from reaching a property. The multi-hazard goal for structural control projects for Adams County and NFIP communities is to continue to use structural control projects, where feasible, to minimize the potentially damaging effects of hazards on people and property.

PUBLIC INFORMATION
FEMA defines public information activities as those that advise property owners, potential property owners, and visitors about the hazards, ways to protect themselves and their property from the hazards. The multi-hazard goal for public information for Adams County and NFIP communities is to continue to educate and inform the public about the risks of hazards and ways to protect themselves and their property.

5.2 PROPOSED MITIGATION PROJECTS

The Planning Committee reviewed the list of mitigation ideas from FEMA for each of the hazards studied as part of this planning effort and identified which of these they felt best met their needs as a community.

The Planning Committee evaluated proposed mitigation projects according to selected social, technical, administrative, political, and legal criteria. The following identifies the key considerations for each evaluation criteria:

- Social – the proposed mitigation projects will have community acceptance, they are compatible with present and future community values, and do not adversely affect one segment of the population.
- Technical – the proposed mitigation project will be technically feasible, reduce losses in the long-term, and will not create more problems than they solve.
- Administrative – the proposed mitigation projects may require additional staff time, alternative sources of funding, and have some maintenance requirements.
- Political – the proposed mitigation projects will have political and public support.
- Legal – the proposed mitigation projects will be implemented through the laws, ordinances, and resolutions that are in place.

As part of the process to identify mitigation projects, the Planning Committee weighed the benefit derived from each mitigation project with the estimated cost of that project. Preparing detailed benefit cost ratios was beyond the scope of this planning effort and the intent of the MHMP. A more detailed benefit cost analysis will need to be completed during the pre-application phase of a grant request. The Planning Committee identified the mitigation projects as having a high, medium, or low benefit cost ratio based on their experience and professional judgment.

The following is a description of the proposed mitigation projects for Adams County and NFIP communities. These projects are categorized by the six mitigation measures used by FEMA – prevention, property protection, natural resource protection, emergency services, structural control projects, and public information. The following proposed mitigation projects are general in nature, specific details on project location for each project is identified in **Table 5-1**.

5.2.1 PREVENTION

Mitigation projects for prevention include land use planning and zoning, special projects and studies, floodplain management, geographic information services, safe rooms and community shelters, community ratings system, safety procedures for hazardous materials, tree maintenance, and utilities.

P1 – Land Use Planning and Zoning

P1.a) Incorporate hazard mitigation goals into the current Comprehensive Land Use Plan. The Comprehensive Land Use Plan is a powerful planning tool for hazard mitigation since it defines how and where a community should be developed and the goals and objectives identified in the Plan become the foundation for all development ordinances in the community.

P1.b) Establish hazard zones or overlay districts in the Zoning Ordinance to permit only those land uses, such as parks or agriculture that are less susceptible to damage from hazards like flooding. Limit development, especially of critical facilities, in known hazard areas.

P1.c) Encourage the use of innovative planning tools such as open space planning, cluster development, greenways development, and conservation easements to limit development in known hazard areas.

P1.d) Review construction standards and building codes to ensure that hazard protection standards, especially for critical facilities, are incorporated into local building codes. Building codes are an important mitigation measure for flood, earthquake, tornado, windstorm, and severe winter storms. This may include sprinkler systems, structural bracing, anchor bolts, and secured exterior materials such as roof shingles, shutters, and furnishing. Equally important to ensuring that hazard protection standards are included in the local code is enforcement through regular inspections during construction.

<u>P2 – Special Projects and Studies</u>

P2.a) Conduct special projects and studies such as hydrology and hydraulic modeling and watershed management planning in known hazard areas to better understand conditions and identify solutions. Based on a review of available flood insurance studies, a large percentage of waterways in Adams County have not been studied in detail and will need to be studied in detail in order to have a more accurate picture of the flood risk areas, to more accurately estimate the magnitude of expected damages, and to provide the needed data to the regulating agencies so that they can prohibit new development in the highest risk areas such as floodways. MRBC is a Cooperative Technical Partner (CTP) with FEMA. As a result, it has been continually performing needs assessment studies, detailed floodplain studies, and floodplain refinement studies within the five-county region in its jurisdiction that includes Adams County. The County and NFIP communities should allocate additional budget for cost sharing the noted studies so that a larger number of detailed studies can be conducted each year.

P2.b) Continue to pursue watershed-based solutions such as regional detention to resolve flooding problems in more than one jurisdiction.

<u>P3 – Floodplain Management</u>

P3.a) Move toward adopting the Association of State Floodplain Managers (ASFPM) “No Adverse Impact” (NAI) for floodplain management. The premise of the NAI concept is that when left in its natural state, the floodplain is able to store and dissipate floods with no adverse impact on humans or the built infrastructure. The intent of NAI is not to stop development but to ensure that any adverse impact caused by a project is mitigated such as through compensatory storage requirements.

P3.b) Participate in the Indiana Association of Floodplain and Stormwater Managers (INAFSM). INAFSM members include federal, state, and local agency staff, engineers, consultants, planners, elected officials, members of academia, students, and floodplain residents interested in floodplain and stormwater management in the State of Indiana.

P3.c) Encourage that one or more staff for each NFIP community is a Certified Floodplain Manager (CFM). The ASFPM has established a national program for professional certification for floodplain managers. The role of floodplain managers is expanding due to increases in disaster losses and emphasis is now being placed on mitigation planning to alleviate the cycle of damage-rebuild-damage, also recognized is a need for professionals to adequately address these issues.

<u>P4 – Geographic Information Systems (GIS)</u>

P4.a) Incorporate local data into the HAZUS-MH database. HAZUS-MH uses national data, which may not accurately reflect the conditions in Adams County. Local data should include physical (soil, hydrology, and floodplain) and cultural (critical and non-critical facility location and attributes).

P4.b) Encourage local GIS data includes classifications that are compatible with HAZUS-MH including type of critical facilities, building type by occupancy, construction materials, transportation systems, and lifeline systems.

P4.c) Update HAZUS-MH with local data that is at the parcel level rather than based on averaged Census Tract (Earthquake Model) or Census Block (Flood Model).

P4.d) Train GIS staff in HAZUS-MH to quantitatively estimate losses in "what if scenarios". Such scenarios could aid with planning efforts as well as determining the benefit-cost ratios necessary for mitigation planning grant applications. Although HAZUS-MH is recommended by FEMA, it is not a substitute for detailed engineering studies and is intended to serve as a planning tool for communities interested in assessing their risk to flood and earthquake.

P4.e) Continue to use the most recent GIS data in land use planning efforts.

<u>P5 – Safe Rooms and Community Shelters</u>

P5.a) Establish safe rooms or community shelters in vulnerable locations. The warning time associated with many hazards, such as dam failure, earthquake, tornado, windstorm, utility failure, and hazardous material is very short. Communities that have known hazards, based on historical hazard data or the HAZUS-MH Earthquake or Flood Models, should ensure the population is protected.

P5.b) Require safe rooms in all new public facilities. These facilities are typically centrally located, are accessible for all levels of mobility, and regularly occupied by a large percentage of the population.

P5.c) Clearly advertise the location of local safe rooms and community shelters for both residents and visitors to Adams County.

<u>P6 – Community Ratings System (CRS)</u>

P6.a) Encourage CRS participation among NFIP communities in Adams County. The CRS is a voluntary incentive program that recognizes and encourages community floodplain activities that exceed the minimum NFIP requirements. As a result, flood insurance premiums rates are discounted to reflect the reduced flood risk.

P6.b) Encourage an improvement in CRS rating for communities currently participating in the program. Savings in flood insurance premiums are proportional to the points assigned to various activities. Flood insurance policyholders in participating NFIP communities with 4500 or more CRS activity points would receive a 45% discount in flood insurance premiums.

<u>P7 – Safety Procedures for Hazardous Materials</u>

P7.a) Require employee training to ensure the proper storage, transport, and disposal of hazardous materials. Dangerous spills of hazardous materials can be avoided through safe handling and transport techniques.

P7.b) Maintain LEPC reporting and training efforts as required through SARA Title III.

<u>P8 – Tree Maintenance</u>

P8.a) Maintain trees in good condition in road right-of-way, utility corridors, and public property. Regular maintenance improves the health and longevity of public trees as well as reduces the potential for dead or dying limbs from falling and damaging people, property, and utility lines during a tornado, windstorm, or severe winter storm.

P9 – Utility Use and Location

P9.a) Where feasible, locate utilities outside of known hazard areas. With the exception of urban flooding, floodplains are known hazard areas for both flooding and dam failure. Identifying the location of tornados, windstorms, earthquakes, hazardous materials, and severe winter storms are more difficult to predict.

P9.b) Continue to participate in digging hotline services such as HOLEY MOLEY to identify underground utilities. The Indiana Underground Plant Protection Service Inc. (IUPPS) offers a free statewide utility notification service to locate and mark all underground utility lines.

P9.c) Continue to bury new and retrofitted utilities (phone, electrical) to minimize exposure to hazards. Although access to buried utility lines may be more difficult when the ground is frozen, they are less likely to be damaged by tornados, windstorm, or severe winter storms. The benefit to bury all above ground utility lines does not outweigh the associated cost however; it does make sense for new development and reconstruction projects.

5.2.2 PROPERTY PROTECTION

Mitigation projects for property protection include techniques for protecting building and property insurance.

PP1 – Building Protection

PP1.a) Discourage the construction of critical facilities in known hazard areas. Access to and from medical care, police, fire, emergency operation centers, power substations, potable water, and wastewater treatment facilities may be necessary during and following a hazard event. Other types of critical facilities such as schools and government buildings are regularly occupied by a large percentage of the population that could become trapped if built in a known hazard area.

PP1.b) Continue to secure funding to assist with the acquisition, relocation, and elevation of buildings in known hazard areas. Ninety percent of federal disaster declarations are for flood events. Response and recovery costs can be extremely high, so where risks are apparent, it makes sense to take actions that prevent damage from occurring. MRBC, in cooperation with various NFIP communities within Adams County, has been actively pursuing voluntary acquisition of flood-prone properties within the County. Based on the recommendations of the 1995 MRBC Master Plan, priority is given to structures within the regulatory floodway, structures subject to 3 feet or higher depth of flooding during the 100-year flood, and those properties that are targeted by each community for voluntary buyout based on past floodfighting experience, park and open space plans, and those designated by FEMA or State as repetitive loss properties. Based on the 1995 MRBC Master Plan study and subsequent refinements of that study, 62 residential structures within Decatur have been proposed to be bought out according to a voluntary acquisition program detailed in a report by CBBEL prepared for MRBC in September 1996. Twenty-four of the noted 62 residential structures have been purchased and the buildings demolished and removed since the inception of the Master Plan.

PP1.c) Both residential and non-residential structures may be floodproofed to prevent structure and content damage during a flood event. Dry-floodproofing techniques may be used to prevent floodwater from damaging the building by strengthening walls, sealing openings, or using waterproof compounds or plastic sheeting on walls. Wet-floodproofing techniques allow for easier clean up following a flood event through the use of water resistant paints or other materials. Wet-floodproofing may be used in residential garages or accessory structures. Based on the 1995 MRBC Master Plan study, 88 residential structures within Decatur are proposed to be floodproofed according to a voluntary floodproofing program detailed in a report by CBBEL prepared for MRBC in January 1996. Since the inception of the Master Plan, 4 of the noted 88 structures have been floodproofed.

<u>P2 – Insurance</u>

PP2.a) Encourage property owners in known hazard areas to obtain insurance to protect their investment. Insurance should not be considered as an alternative to reducing damages for any type of hazard, but it does have value of protecting oneself from financial devastation if damage were to occur.

5.2.3 NATURAL RESOURCE PROTECTION

Mitigation projects for natural resource protection include land use planning and stormwater management.

<u>NR1 – Land Use Planning</u>

NR1.a) Restrict development in the floodplain through ASFPM's "No Adverse Impact" (NAI). The premise of the NAI concept is that when left in its natural state, the floodplain is able to store and dissipate floods with no adverse impact on humans or the built infrastructure. The intent of NAI is not to stop development but to ensure that any adverse impact caused by a project is mitigated such as through compensatory storage requirements.

NR1.b) Adopt a Watercourse Protection Ordinance. Floodplains and riparian corridor, when left in their natural state, are able to store floodwaters, filter sediments and pollutants carried by stormwater, and provide valuable aquatic and biotic wildlife habitat. The CRS provides additional credit to NFIP communities that prepare a habitat protection plan including riparian corridor protection.

NR1.c) Protect natural wetland from encroachment from development and agricultural activities. Wetlands serve as natural collection basins for floodwaters. Acting like sponges, wetlands collect water, filter it, and release it slowly into rivers and streams. Protecting and preserving wetlands can go a long way toward preventing flooding in other areas.

NR1.d) Enforce erosion and sediment control practices during construction activities. Soil carried by stormwater runoff will settle at the bottom of streams and detention basins restricting the volume of floodwaters held and cause localized flooding.

5.2.4 EMERGENCY SERVICES

Mitigation projects for emergency services include mutual aid agreements, emergency warning systems, and power back up systems.

<u>ES1 – Mutual Aid Agreements</u>

ES1.a) Utilize mutual aid agreements with neighboring communities and counties to ensure quick response in the event of a hazard. In addition to fire and police, mutual aid agreements can be extended for utility and communication systems, including 9-1-1.

<u>ES2 – Emergency Warning Systems</u>

ES2.a) Utilize emergency warning sirens to alert the population of a potential tornado or windstorm. Advanced warnings such as sirens, in conjunction with the Emergency Alert System (EAS) broadcasts, are an effective mitigation measure to reduce loss of life and property.

ES2.b) Utilize stream gages for flood warning. Although the use of stream gages does not provide long-term damage reduction, it can alleviate health and safety risk by providing citizens time to escape and possibly remove belongings that could be damaged. NOAA

Weather Radio and the EAS broadcast can be incorporated into the community's flood warning system.

ES2.c) Encourage residents and businesses, especially critical facilities, in known hazard areas to stay abreast of current weather conditions with NOAA Weather Radio. NOAA Weather Radio continuously broadcasts National Weather forecasts, warnings, and other crucial weather information. NOAA Weather Radio also provides direct warning to the public for natural, man-made, or technological hazards, and it is the primary trigger for activating the EAS on commercial radio, television, and cable systems.

ES3 – Power Back-Up Generators

ES3.a) Require emergency back-up generators for all critical facilities in known hazard areas. Back-up power is essential at medical care, police, fires, and community shelter facilities.

5.2.5 STRUCTURAL CONTROL PROJECTS

Mitigation projects for structural control projects include requirements for high hazard dams and drainage systems.

SC1 – Maintenance and Management of High Hazard Dams

SC1.a) Require an Emergency Action Plan (EAP) for high hazard dams. Dams should be designed, monitored, and maintained so that they do not fail. However, conditions beyond the control of the dam owner and engineer can occur due to unforeseen structural problems, natural forces, mistakes in operation, negligence, or vandalism. An Emergency Action Plan is not required by the State at this time; however, it is one of the recommendations of the 2003 Indiana Dam Safety Inspection Manual.

SC1.b) Encourage regular inspection and maintenance of high hazard dams. The storage of water is a potentially hazardous activity. Under Indiana law, the owner of a dam is responsible for operating and maintaining the dam in a safe manner to prevent harm to others and their property. Dam inspection should include formal technical inspections, maintenance inspections, informal inspections, and special inspections.

SC2 – Stormwater Drainage System Improvements

SC2.a) Minimize impacts from flooding by utilizing systems to divert and/or retain floodwater. Flood mitigation can involve installing, re-routing, or increasing the capacity of a storm drainage system that may involve detention and retention ponds, drainage easements, or creeks and streams. It can include separation of storm and sanitary sewage systems as well as higher engineering standards for drain and sewer capacity.

SC2.b) Maintain channels and regulated drains on a regular basis to prevent localized flooding. If a drainage system in not maintained, erosion, material dumping, or deterioration of fabricated reinforcement materials may reduce the carrying capacity of a stream.

5.2.6 PUBLIC INFORMATION

Mitigation projects for public information include education and outreach projects.

PI1 – Public Education and Outreach Projects

PI1.a) Take advantage of opportunities to participate in community events, local neighborhood meetings, and area school activities to share information on the different types of hazards, methods for preventing damages resulting from hazardous conditions, and how to respond when a hazard threatens. These efforts should be year-round with a special emphasis during Severe Weather Awareness Week in March of each year.

PI1.b) Maintain hazard literature at public facilities. FEMA publishes information on all types of hazards, from methods for preventing damages resulting from hazardous conditions to how to respond when a hazard threatens. Materials should be readily available at the EMA's office, police and fire stations, government offices, public libraries, and community webpage.

PI1.c) Incorporate literature on other known hazards, in addition to flood materials, as part of the regular outreach efforts required through the CRS program.

5.3 SUMMARY OF PROPOSED MITGATION PROJECTS

Table 5-1 lists the mitigation projects, local status, local priority, benefit-cost ratio, project location, responsible entity, funding source, and hazard addressed as identified by the MHMP Planning Committee. The local status, as identified in Table 5-1, is categorized as "on-going", "on-going (but enhancement needed)", and "proposed". Mitigation projects identified as "on-going (but enhancement needed)" and "proposed" will be implemented within the 5-year term of this MHMP. However, depending on availability of funding, some proposed mitigation projects may take longer to implement. The proposed mitigation projects are organized in terms of the six mitigation measures used by FEMA – prevention, property protection, natural resource protection, emergency services, structural control projects, and public information.

The development of this MHMP is the necessary first step of a multi-step process to implement programs, policies, and projects to mitigate the effect of hazards in Adams County. The intent of this planning effort was to identify the hazards and the extent that they affect Adams County and to determine what type of mitigation strategies or projects may be undertaken to mitigate for these hazards. Although this MHMP meets the requirements of DMA 2000 and eligibility requirements of the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM) Grant, as well as other FEMA programs including the NFIP's Community Ratings System (CRS), additional detailed studies will need to be completed prior to applying for these grants or programs.

NFIP/CRS

The CRS program credits NFIP communities a maximum of 72 points for setting goals to reduce the impact of flooding and other known natural hazards; identifying mitigation projects that include activities for prevention, property protection, natural resource protection, emergency services, structural control projects, and public information.

Table 5-1
Proposed Mitigation Projects

Project Number	Status	Local Priority (High, Medium, Low)	Benefit Cost Ratio (High B>C, Medium B=C, Low B<C)	Project Location	Responsible Entity	Funding Source	Hazards Addressed
P1.a P1.b P1.c P1.d	On-going	High	High	Adams County and all communities. Adams County provides planning services for Berne, Geneva, Preble, and Monroe.	*Planning & Engineering for:* Adams County City of Decatur	Existing budget	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
P2.a P2.b	On-going	High	High	Adams County and communities with floodplains and flooding problems including Decatur and Geneva.	MRBC *Planning, Engineering, & Surveyor for:* Adams County City of Decatur Town of Geneva	Existing budget	Flood
P3.a P3.b P3.c	On-going	High	High	Adams County and communities with floodplains and flooding problems including Decatur and Geneva.	MRBC *Planning, Engineering, & Surveyor for:* Adams County City of Decatur Town of Geneva	Existing budget	Flood
P4.a P4.b P4.c P4.d P4.e	Proposed & on-going (but enhancement needed)	Medium	Low	Adams County provides GIS services for Berne, Decatur, Geneva, Preble, and Monroe.	*GIS & Planning for:* Adams County	Existing budget, FEMA PDM grant for mapping	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake

Project Number	Status	Local Priority (High, Medium, Low)	Benefit Cost Ratio (High B>C, Medium B=C, Low B<C)	Project Location	Responsible Entity	Funding Source	Hazards Addressed
P5.a P5.b P5.c	Proposed & ongoing (but enhancement needed)	High	High	All public buildings throughout the County.	Building Owner *EMA & Red Cross for:* Adams County	Existing budget for construction & operation	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
P6.a	Proposed	High	Medium	All NFIP communities not currently participating in the CRS program. Both Preble and Monroe participated in this planning process but are not NFIP communities.	*NFIP coordinator for:* Adams County Town of Berne Town of Geneva	Existing budget	Flood
P6.b	On-going	High	High	Exiting CRS program participant.	*NFIP coordinator for:* City of Decatur	Existing budget	Flood
P7.a P7.b	On-going	High	High (training & reporting) Medium (transport & disposal)	All hazardous material facilities and transportation routes per SARA Title III requirements.	Hazardous material owner (public & private) and transporter *EMA & LEPC for:* Adams County	Existing budget for operation	Hazardous Materials
P8.a	On-going	High	Medium-Low	All public property, utility corridors, and ROW	SBC Ameritech Sprint Jay County REMC Indiana-Michigan Power *Parks, Streets & Highway for:* Adams County City of Berne	Utility rate or existing budget	Severe Winter Storm Tornado/Windstorm Utility Failure

Project Number	**Status**	**Local Priority** (High, Medium, Low)	**Benefit Cost Ratio** (High B>C, Medium B=C, Low B<C)	**Project Location**	**Responsible Entity**	**Funding Source**	**Hazards Addressed**
					City of Decatur Town of Geneva Town of Preble Town of Monroe		
P9.a P9.b P9.c	On-going	High	High- Medium	All above and underground utility corridors throughout Adams County.	SBC Ameritech Sprint Jay County REMC Indiana-Michigan Power NIPSCO *Public works for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Utility rate or existing budget	Utility Failure
PP1.a PP1.b	On-going	High	High	All buildings in the floodplain especially repetitive loss structures, those in the regulatory floodway, and the areas identified in the MRBC Master Plan and HAZUS-MH with the greatest total economic loss in Decatur.	MRBC *NFIP coordinator for:* Adams County City of Berne City of Decatur Town of Geneva	Existing budget, property owners, and PDM & HMGP grants from FEMA	Flood

Project Number	Status	Local Priority (High, Medium, Low)	Benefit Cost Ratio (High B>C, Medium B=C, Low B<C)	Project Location	Responsible Entity	Funding Source	Hazards Addressed
PP1.c	On-going	High	High	All non-residential structures in the floodplain especially repetitive loss structures, those in the regulatory floodway, and those identified in the MRBC Master Plan and HAZUS-MH with the greatest total economic loss in Decatur.	MRBC *NFIP coordinator for:* Adams County City of Berne City of Decatur Town of Geneva	Existing budget, property owners, and PDM & HMGP grants from FEMA	Flood
PP2.a	On-going	High	High	All buildings in known hazards, especially for predictable hazard paths such as flood and dam failure, throughout Adams County.	Building Insurance Carriers Building Owners MRBC *NFIP coordinator for:* Adams County City of Berne City of Decatur Town of Geneva	Existing budget and property owners	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
NR1.a	On-going	High	High	Adams County and communities with floodplains and flooding problems including Decatur and Geneva. Adams County provides planning services for Berne, Geneva, Preble, and Monroe.	*Planning for:* Adams County City of Decatur	Existing budget	Flood

Project Number	Status	Local Priority (High, Medium, Low)	Benefit Cost Ratio (High B>C, Medium B=C, Low B<C)	Project Location	Responsible Entity	Funding Source	Hazards Addressed
NR1.b	Proposed	High	High	Adams County and communities with floodplains and flooding problems including Decatur and Geneva. Adams County provides planning services for Berne, Geneva, Preble, and Monroe.	*Planning for:* Adams County City of Decatur	Existing budget	Flood
NR1.c NR1.d	On-going	High	High	Adams County and all communities. Adams County provides planning services for Berne, Geneva, Preble, and Monroe.	*Planning for:* Adams County City of Decatur	Existing budget	Flood
ES1.a	On-going	High	High	All police, fire, and EMA in Adams County and where needed with neighboring communities in Allen, Wells, and Jay Counties.	*EMA &Public Safety for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Existing budget	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
ES2.a	On-going	High	Medium	Additional sirens are needed in Decatur (2).	*EMA & Public Safety for:* Adams County City of Decatur	Existing budget	Tornado/Windstorm
ES2.b	On-going	High	High	Additional stream gages needed on Wabash River (Geneva) and Borum Run and Yellow Creek (Decatur).	USGS *EMA & Surveyor for:* Adams County	Existing budget	Flood

Project Number	Status	Local Priority (High, Medium, Low)	Benefit Cost Ratio (High B>C, Medium B=C, Low B<C)	Project Location	Responsible Entity	Funding Source	Hazards Addressed
ES2.c	Proposed	High	High	Adams County and all communities.	*EMA & Public Safety for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Existing budget, PDM grant, Homeland Security funds	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
ES3.a	Proposed & on-going (but enhancement needed)	High	Medium	All critical facilities including dams, airports, broadcast facilities, WTPs, EOC, public safety facilities, hazardous materials, power facilities, schools, and WWTPs throughout Adams County.	Building owner (private & public) *EMA for:* Adams County	Cost of construction/ operation. PDM grants	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
SC1.a	Proposed	High	High	All high hazard dams (Saddle Lake Dam) should have an EAP.	High hazard dam owner (private)	Cost of operation	Dam Failure
SC1.b	On-going	High	Medium	All dams in Adams County regardless of downstream hazard potential.	Dam owner IDNR	Cost of operation, HOA fees, existing budget	Dam Failure
SC2.a	On-going (limited due to cost)	Low	Medium	All new development requires flood storage. Protect older, establish developments in Decatur with levees or floodwalls	*Surveyor & Engineering for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Existing budget, FEMA grants for design and/or construction	Flood

Project Number	Status	Local Priority (High, Medium, Low)	Benefit Cost Ratio (High B>C, Medium B=C, Low B<C)	Project Location	Responsible Entity	Funding Source	Hazards Addressed
SC2.b)	On-going	High	High	All regulated drains, St. Mary's, Wabash, and tributaries.	*Surveyor & Public Works for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Existing budget, landowner, special assessment	Flood
PI1.a	On-going	High	High	All schools and community events especially during Severe Weather Awareness Week in March.	*PIO for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Existing budget, FEMA grants may be available	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
PI1.b	On-going	High	High	All public buildings including EMA's office, public safety facilities, government offices, public libraries, and webpage.	*PIO for:* Adams County City of Berne City of Decatur Town of Geneva Town of Preble Town of Monroe	Existing budget	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake
PI1.c	Proposed	High	High	Existing CRS communities. Add new communities as they join the CRS program.	MRBC *NFIP coordinator for:* City of Decatur	Existing budget	Flood Severe Winter Storm Tornado/Windstorm Hazardous Materials Utility Failure Dam Failure Earthquake

6.0 PLAN MAINTENANCE PROCEDURES

6.1 MAINTENANCE PROCESS

Throughout the 5-year planning cycle, the Adams County EMA will reconvene the MHMP Planning Committee on an annual basis in order to monitor, evaluate, and update the Plan as needed. Members of the Planning Committee are readily available to engage in meet between annual meetings. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual NFIP communities or through local partnerships.

This is the first MHMP that Adams County and NFIP communities have prepared. The data used to prepare the Adams County MHMP was based on "best available data" or data that was readily available during the development of this Plan. Because of this, there are limitations to the data. As better data becomes available, updates should be made to the risk assessment and vulnerability analysis.

Updates or modifications to the Adams County MHMP during the 5-year planning process will require a public notice and/or meeting prior to submitting revisions to the individual jurisdictions for approval.

6.2 INCOPRORATION INTO EXISTING PLANS

Many of the mitigation projects identified as part of this planning process are on going with some enhancement needed. Where needed, modifications will be made to NFIP communities' planning documents and ordinances during the regularly scheduled update.

GIS data needed for hazard analysis, including data needed for HAZUS-MH, will be updated throughout the 5-year planning cycle by the County GIS Department.

6.3 CONTINUED PUBLIC INVOLVEMENT

Continued public involvement is critical to the successful implementation of the Adams County MHMP. Comments from the public on the MHMP will be received by the EMA Director and forwarded onto the MHMP Planning Committee for discussion. Education efforts for hazard mitigation will be the focus of the annual Severe Weather Awareness Week as well as incorporated into existing stormwater planning, land use planning, and special projects/studies efforts.

Once adopted, a copy of this Plan will be posted on the Adams County webpage and available for public review at the EMA Office.

Updates or modifications to the Adams County MHMP during the 5-year planning process will require a public notice and/or meeting prior to submitting revisions to the individual jurisdictions for approval.

NFIP/CRS

The CRS program credits NFIP communities a maximum of 37 points for adopting the Plan; establishing a procedure for implementation, review, and updating the Plan; and submitting an annual evaluation report.

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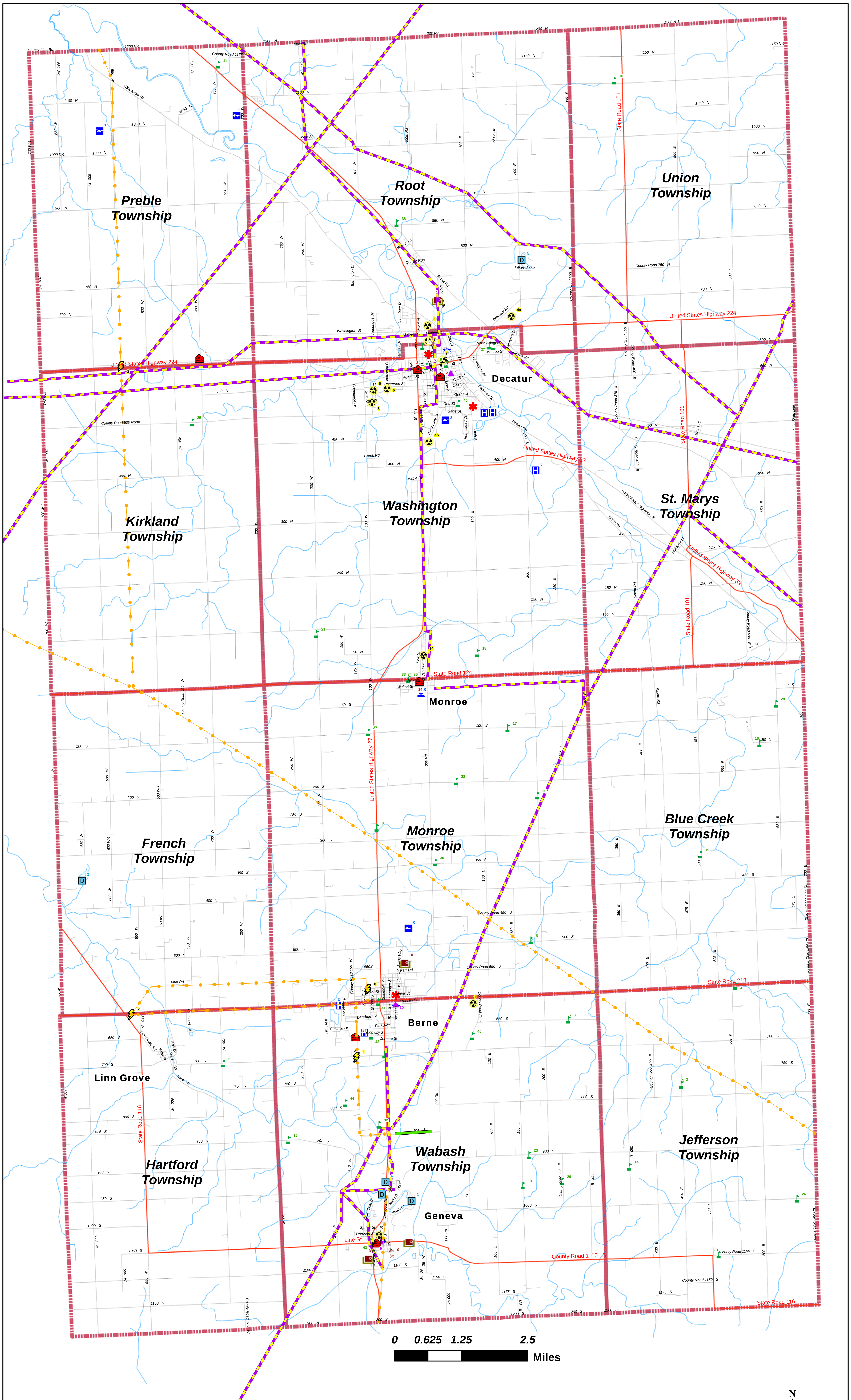
Critical Facilities

Adams County, Indiana



AIRPORTS

ID	NAME
0	SPRUNGERS SO ADAMS COUNTY AIRS
1	BLOMENBERG
3	GAGE
4	HOLT FIELD

BROADCAST FACILITIES

ID	Name
0	Cell Tower - Cen

DAMS

ID	Name
0	LAKE OF THE WOODS DAM
1	RAINBOW LAKE DAM
2	MEYER LAKE DAM
3	SADDLE (CLEM) LAKE
4	DONNALLY LAKE DAM

EMERGENCY MANAGEMENT FACILITIES

ID	NAME	CLASS
0	CITY POLICE DEPT	Police
1	GENEVA POLICE DEPT	Police
2	CITY FIRE DEPT	Fire
3	FIRE DEPT	Fire
4	PREBLE FIRE DEPARTMENT	Fire
5	ADAMS CO. CIVIL DEFENSE	EOC
6	EMER OP CENTER/COUNTY JAIL	EOC
7	ADAMS CO SERVICE COMPLEX	Gov't
8	GENEVA FIRE DEPARTMENT	Fire
9	GENEVA CITY HALL	Gov't
10	BERNE CITY HALL	Gov't
11	BERNE POLICE DEPT	Police
12	BERNE EMS GARAGE	EOC
13	BERNE FIRE DEPT	Fire

HAZARDOUS MATERIAL HANDLERS

ID	Name
1	BING-LEAR MFG. GROUP-BERNE
2	CENTRAL SOYA CO. INC.
3	HAMILITON FNDY.& MACHINE CO. DECATUR CAS
4a	FLEETWOOD MOTOR HOMES OF INDIANA INC. 44
4b	FLEETWOOD MOTOR HOMES OF INDIANA INC. 44
5	GOLD SHIELD OF INDIANA INC. 43-2
6	GILPIN IRONWORKS
7	SILBERLINE MFG. CO. INC.
8	THUNDERBIRD PRODS.
9	ELKHART PRODS. CORP.
10	STRICK CORP.

MEDICAL CARE FACILITIES

ID	NAME
1	CHALET VILLAGE HEALTH AND REHABILITATION CENTER
2	Swiss Village Inc.
3	Woodcrest Nursing Center
4	ADAMS COUNTY HOSPITAL
5	County Home Nursing Home

POTABLE WATER PLANT

ID	Name
0	MONROE PUBLIC WATER SUPPLY

POWER STATIONS

ID	NAME
0	AEP Substation
1	AEP South Berne Substation
2	AEP Substation
3	AEP Power Station

SCHOOLS

ID	NAME
0	Blue Creek Amish School
1	Brookside Amish School
2	Clearview AMish School
3	Faith Christian Acadamy
4	Lincoln Amish School 2
5	Maple Leaf
6	Plain View Amish School
7	Prairie School
8	South East Amish School
9	St Joseph Elementary School
10	St Peter Immanuel Lutheran School
11	Wyneken Memorial Lutheran School
12	Zion Lutheran School
13	Eagle Creek Amish School
14	Jefferson Parochial Amish School
15	West Wabash School
16	Countryside School
17	Oak Grove Amish School
18	Pleasant Valley
19	Shady Lane School
20	Swiss Valley
21	Winchester Amish School C/O Girod
22	Fairview Amish School
23	Hickory Grove School
25	Limberlost Creek Amish
26	Lone Pine School
27	Maple Lane School
28	Pleasant Mills Schools
29	South Adams Parochial
30	Springhill School
31	Twin Oak School
32	White Oak Ridge
33	Adams Central Elementary School
34	Adams Central High School
35	Adams Central Middle School
36	Bellmont Middle School
37	Bellmont Senior High School
38	Monmouth Elementary School
39	Northwest Elementary
40	Southeast Elementary School
41	South Adams Elementary School
42	South Adams Jr-Sr High School
43	South Adams Middle School
44	Amish School (from County)
45	Amish School (from County)

WASTEWATER TREATMENT PLANTS

ID	Name
0	BERNE MUNICIPAL WWTP SITE 1
1	DECATUR MUNICIPAL SEWAGE TREATMENT PLANT
2	GENEVA MUNICIPAL WWTP
3	GENEVA WWTP

Government Facilities

ID	NAME
7	ADAMS CO SERVICE COMPLEX
9	GENEVA CITY HALL
10	BERNE CITY HALL

- Airport
- Broadcast Facility
- Dam
- Electrical Transmission Line
- Emergency Operations Center
- Fire Station
- Gas (Crude) Lines
- Government Facility
- Hazardous Materials
- Levee
- Medical Care Facility
- Police Station
- Potable Water Plant
- Power Station
- School
- Wastewater Treatment Plant
- Township Boundary

Sources of Data:

1. *Facility Data from HAZUS (FEMA, 2002) with modifications by MHMA Steering Committee*
2. *Streets, Rivers, Lakes, Municipal Boundaries, Railroads from TIGER Files (US Bureau of the Census, 2000)*
3. *School Data from Indiana Department of Education, 2004*
4. *Medical Care Facilities from Indiana State Department of Health, 2004*

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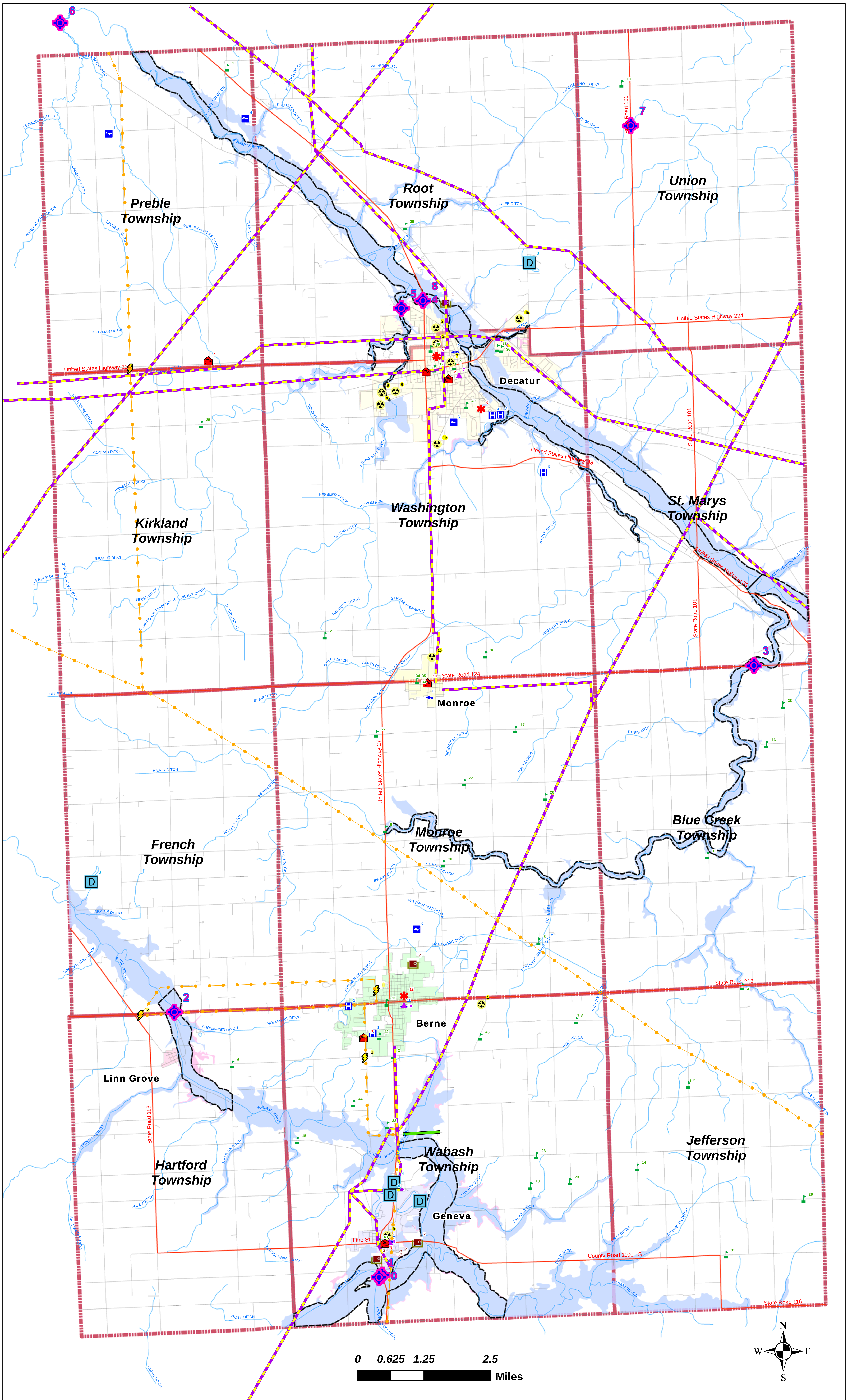
National City Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(tel) 317.266.8000 (fax) 317.632.3306

PROJECT:	PROJECT NO.:	APPROX. SCALE:
Adams County, Indiana Multi-Hazard Mitigation Plan	04-319	1"=1.25 mi
TITLE: Critical Facilities		DATE: 02/05
		EXHIBIT: 1



Flood Zones, USGS Stream Gages, and Dams

Adams County, Indiana

Essential and Critical Facilities Located in the Floodplain

FACILITIES		LOCATION		% of Facility Type	
		In 100-Year Floodplain	In 500-Year Floodplain	In 100-Year Floodplain	In 500-Year Floodplain
Medical Care Facilities					
Facility ID	**Name**			14%	14%
6	Mid-Wife Clinic	Yes	Yes		
Schools				4%	4%
Facility ID	**Name**				
4	Lincoln Amish School 2	Yes	Yes		
32	White Oak Ridge	Yes	Yes		
Airports				20%	20%
Facility ID	**Name**				
4	Holt Field	Yes	Yes		
Potable Water Plants				0%	0%
Facility ID	**Name**				
Fire Stations				0%	0%
Facility ID	**Name**				
Hazardous Materials Handlers				0%	0%
Facility ID	**Name**				
Power Stations					
Facility ID	**Name**				
Wastewater Treatment Plants				0%	0%
Facility ID	**Name**				
Broadcast Facilities					
Facility ID	**Name**			0%	0%
Emergency Operations Centers					
Facility ID	**Name**			0%	0%
Police Stations					
Facility ID	**Name**			0%	0%
Dams				0%	0%
Facility ID	**Name**				

USGS STREAM GAGES

ID	GAGE NAME
0	LOBLOLLY CREEK AT GENEVA, IN
1	LIMBERLOST CREEK AT GENEVA, IN
2	WABASH RIVER AT LINN GROVE, IN
3	BLUE CREEK NR PLEASANT MILLS, IN
4	ST. MARYS RIVER AT DECATUR, IND.
5	HOLTHOUSE DITCH NR DECATUR, IN
6	NICKELSEN CREEK NR POE, IN
7	FLATROCK CR TRIB NR MONROEVILLE, IND.
8	ST MARYS RIVER AT DECATUR IN-USGS 405055084561600

LIST OF DAMS

Map ID	National ID	Dam Name	River
0	IN00207	LAKE OF THE WOODS DAM	Tributary to Wabash River
1	IN00257	RAINBOW LAKE DAM	Tributary to Wabash River
2	IN00258	MEYER LAKE DAM	Tributary to Wabash River
3	IN00773	SADDLE LAKE DAM	Tributary to St Mary's River
4	IN03267	DONNALLY LAKE DAM	Tributary to Wabash River

USGS Stream Gage
Dam
Floodway
100-Year Floodplain
500-Year Floodplain
Airport
Broadcast Facility
Electrical Transmission Line
Emergency Operations Center
Fire Station
Gas (Crude) Lines
Government Facility
Hazardous Materials
Levee
Medical Care Facility
Police Station
Potable Water Plant
Power Station
School
Wastewater Treatment Plant
Township Boundary

Sources of Data:

1. *Facility Data from HAZUS (FEMA, 2002) with modifications by MHMA Steering Committee*
2. *Streets, Rivers, Lakes, Municipal Boundaries, Railroads from TIGER Files (US Bureau of the Census, 2000)*
3. *School Data from Indiana Department of Education, 2004*
4. *Medical Care Facilities from Indiana State Department of Health, 2004*
5. *USGS Stream Gage Data from United States Geological Survey, 2004*
6. *Floodplain Data from Federal Emergency Management Agency, Digital Flood Insurance Rate Maps, 2002*

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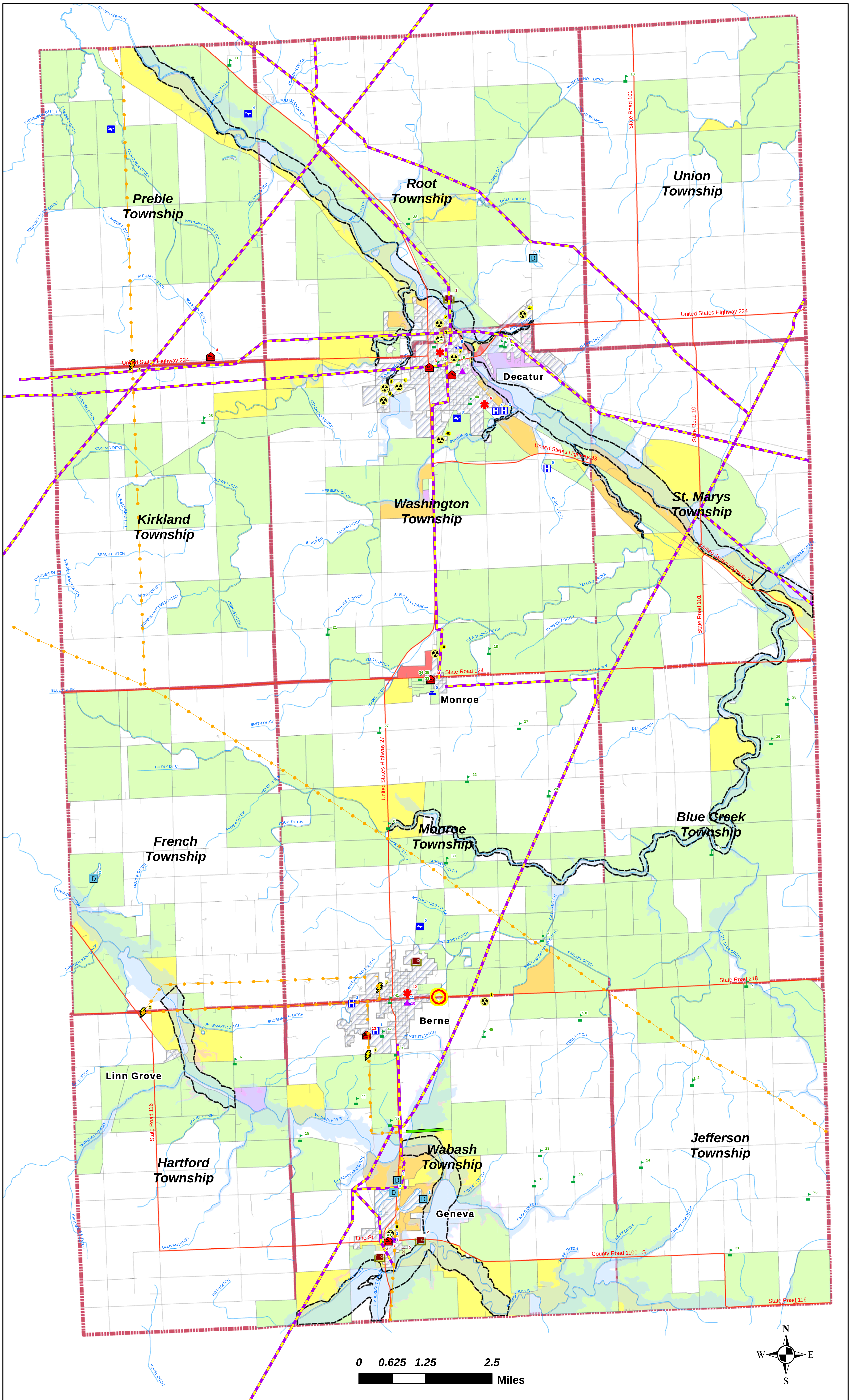
PROJECT:	PROJECT NO.:	APPROX. SCALE:
Adams County, Indiana Multi-Hazard Mitigation Plan	04-319	1"=1.25 mi
TITLE: Flood Zones, USGS Stream Gages, and Dams		DATE: 02/05
		EXHIBIT: 2

Flood Loss Areas

Adams County, Indiana



Total Economic Loss

By Census Block

- \$0 - \$50,000
- \$51,000 - \$200,000
- \$201,000 - \$500,000
- \$501,000 - \$2,000,000
- \$2,001,000 - \$15,000,000

Total Economic Loss = \$53,861,000

- 100-Year Floodplain
- 500-Year Floodplain
- Floodway
- Repetitive Loss Area
- Dam
- Airport
- Broadcast Facility
- Electrical Transmission Line
- Emergency Operations Center
- Fire Station
- Gas (Crude) Lines
- Government Facility
- Hazardous Materials
- Levee
- Medical Care Facility
- Police Station
- Potable Water Plant
- Power Station
- School
- Wastewater Treatment Plant
- Township Boundary
- Municipality

Sources of Data:

1. *Facility Data from HAZUS (FEMA, 2002) with modifications by MHMA Steering Committee*
2. *Streets, Rivers, Lakes, Municipal Boundaries, Railroads from TIGER Files (US Bureau of the Census, 2000)*
3. *School Data from Indiana Department of Education, 2004*
4. *Medical Care Facilities from Indiana State Department of Health, 2004*
5. *Floodplain Data from Federal Emergency Management Agency, Digital Flood Insurance Rate Maps, 2002*
6. *Flood Loss Areas calculated with HAZUS-MH (MR1)*

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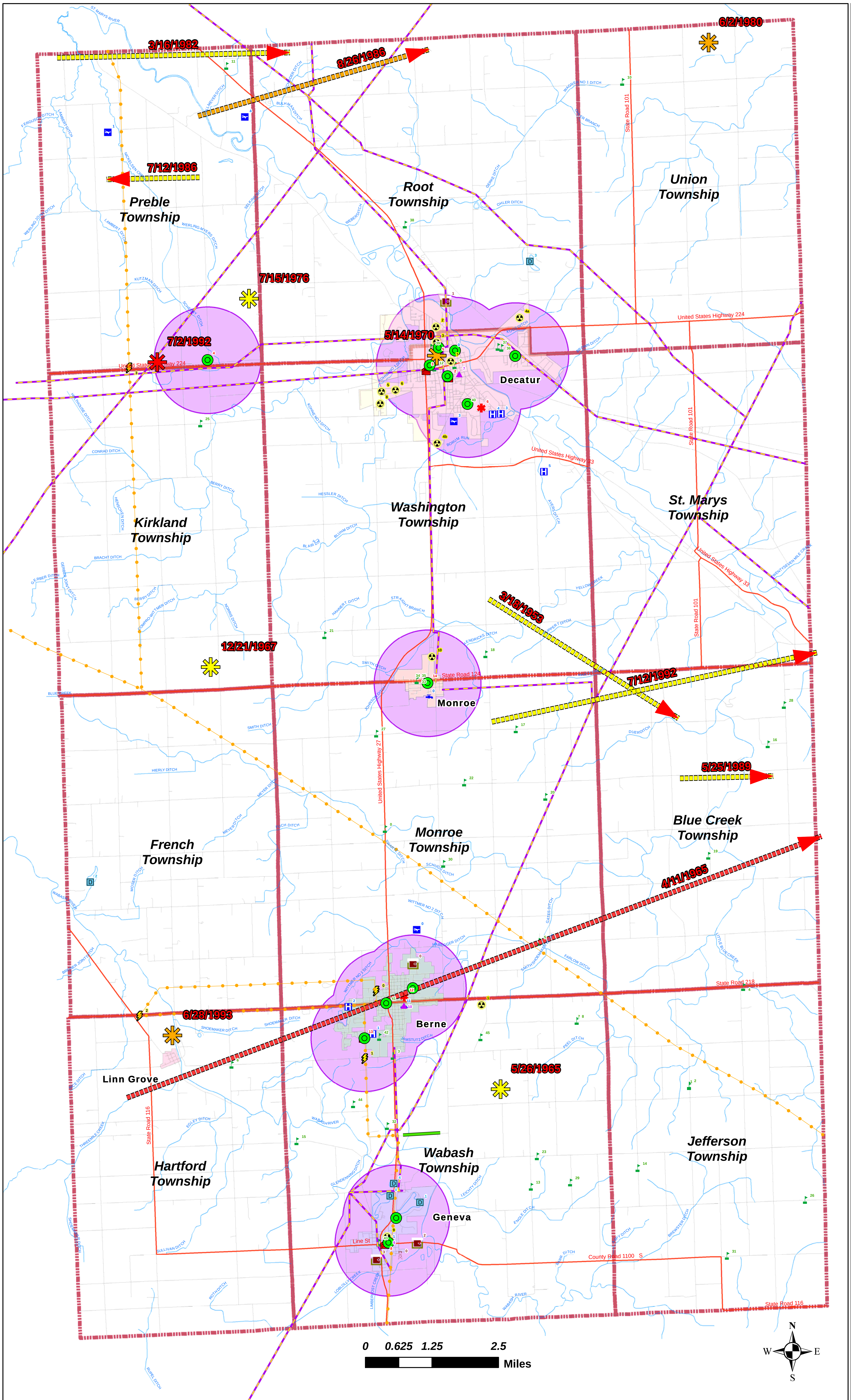
PROJECT:	Adams County, Indiana Multi-Hazard Mitigation Plan
PROJECT NO.:	04-319
APPROX. SCALE:	1"=1.25 mi
DATE:	02/05
TITLE:	Flood Loss Areas
EXHIBIT:	3

Historical Tornado Activity

Adams County, Indiana



Magnitude of Tornadoes

NCDC Tornado Touchdowns

- F0
- F1
- F2

NCDC Tornado Paths

- F1
- F2
- F4

- Warning Siren
- 1 Mile Radius around Warning Siren
- Airport
- Broadcast Facility
- Dam
- Electrical Transmission Line
- Emergency Operations Center
- Fire Station
- Gas (Crude) Lines
- Government Facility
- Hazardous Materials
- Levee
- Medical Care Facility
- Police Station
- Potable Water Plant
- Power Station
- School
- Wastewater Treatment Plant
- Township Boundary

Sources of Data:

1. *Facility Data from HAZUS (FEMA, 2002) with modifications by MHMA Steering Committee*
2. *Streets, Rivers, Lakes, Municipal Boundaries, Railroads from TIGER Files (US Bureau of the Census, 2000)*
3. *School Data from Indiana Department of Education, 2004*
4. *Medical Care Facilities from Indiana State Department of Health, 2004*
5. *Tornado Data from National Climatic Data Center, 2004*

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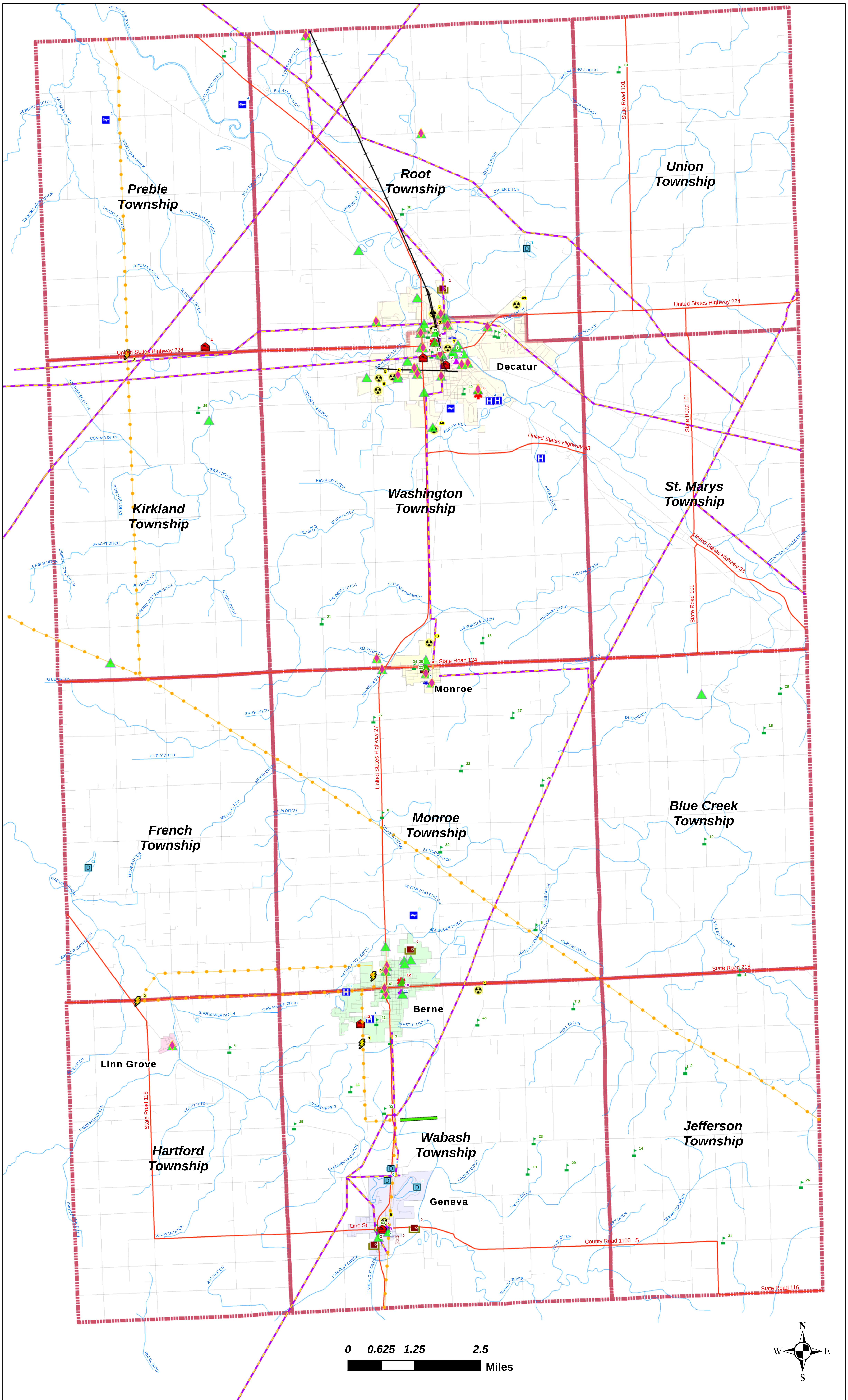
PROJECT:	PROJECT NO.:	APPROX. SCALE:
Adams County, Indiana Multi-Hazard Mitigation Plan	04-319	1"=1.25 mi
TITLE: Historical Tornado Activity		DATE: 02/05
		EXHIBIT: 4

Hazardous Material Sites

Adams County, Indiana



- Leaking Underground Storage Tank
- Airport
- Broadcast Facility
- Underground Storage Tank
- Dam
- Electrical Transmission Line
- Emergency Operations Center
- Fire Station
- Gas (Crude) Lines
- Government Facility
- Hazardous Materials
- Levee
- Medical Care Facility
- Police Station
- Potable Water Plant
- Power Station
- School
- Wastewater Treatment Plant
- Township Boundary
- Railroad

Sources of Data:

1. *Facility Data from HAZUS (FEMA, 2002) with modifications by MHMA Steering Committee*
2. *Streets, Rivers, Lakes, Municipal Boundaries, Railroads from TIGER Files (US Bureau of the Census, 2000)*
3. *School Data from Indiana Department of Education, 2004*
4. *Medical Care Facilities from Indiana State Department of Health, 2004*
5. *Underground Storage Tank and Leaking Underground Storage Tank data obtained from Indiana Geological Survey data download site (http://igs.indiana.edu/arcims/statewide/dload_page/environment.html)*

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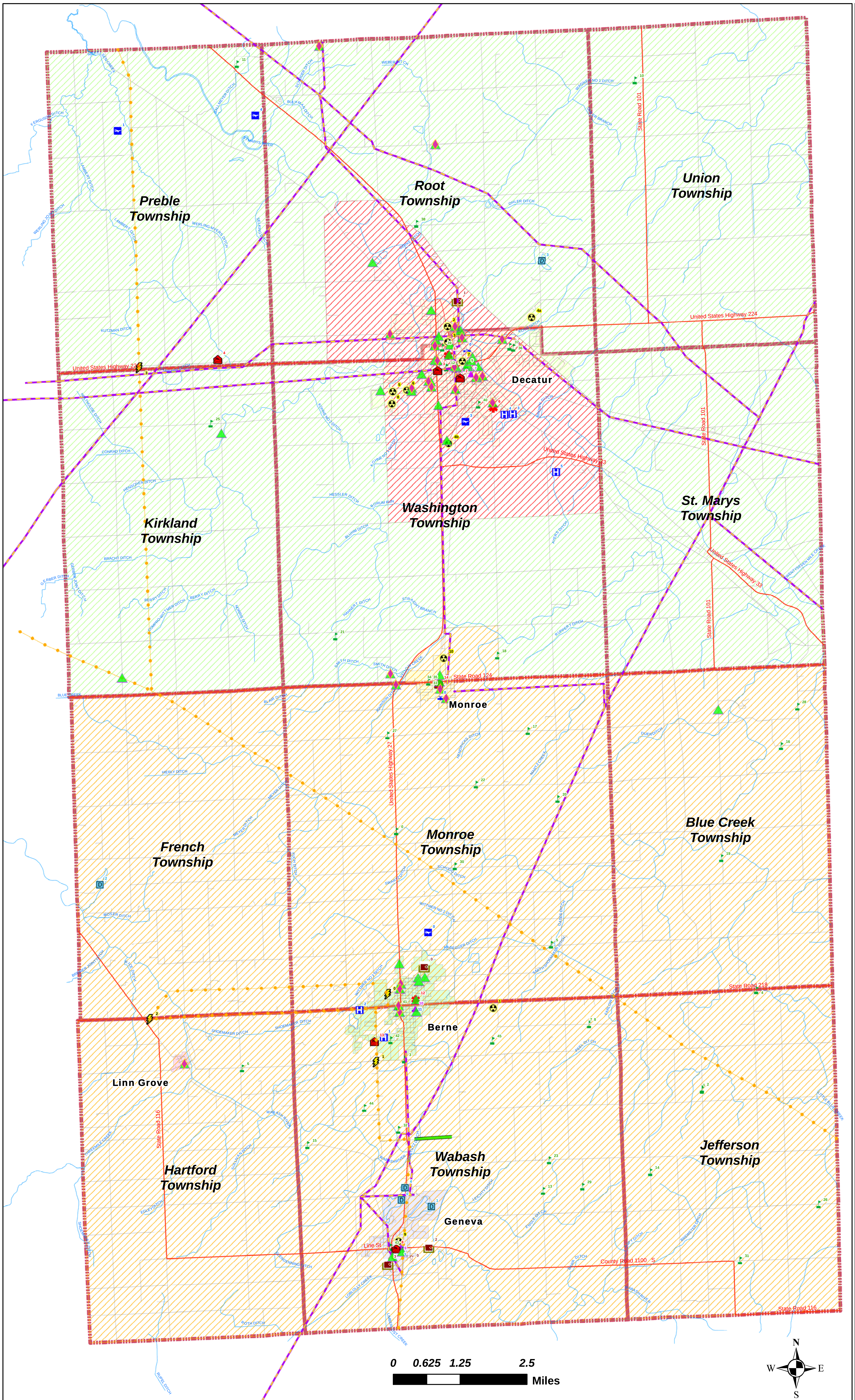
PROJECT:	PROJECT NO.:	APPROX. SCALE:
Adams County, Indiana Multi-Hazard Mitigation Plan	04-319	1"=1.25 mi
TITLE: Hazardous Material Sites		DATE: 02/05
		EXHIBIT: 5

Earthquake Loss Areas

Adams County, Indiana



Direct Economic Loss**
By Census Tract

- $0 - $2,000
- $2,000 - $4,000
- $4,000 - $6,000

*** - Calculations Based on Average Annualized Methodology*

Total Average Annual Loss = $19,140

- Airport
- Broadcast Facility
- Underground Storage Tank
- Dam
- Electrical Transmission Line
- Emergency Operations Center
- Fire Station
- Gas (Crude) Lines
- Government Facility
- Hazardous Materials
- Levee
- Medical Care Facility
- Police Station
- Potable Water Plant
- Power Station
- School
- Wastewater Treatment Plant
- Township Boundary

Sources of Data:

1. *Facility Data from HAZUS (FEMA, 2002) with modifications by MHMA Steering Committee*
2. *Streets, Rivers, Lakes, Municipal Boundaries, Railroads from TIGER Files (US Bureau of the Census, 2000)*
3. *School Data from Indiana Department of Education, 2004*
4. *Medical Care Facilities from Indiana State Department of Health, 2004*
5. *Underground Storage Tank and Leaking Underground Storage Tank data obtained from Indiana Geological Survey data download site (http://igs.indiana.edu/arcims/statewide/dload_page/environment.html)*

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PROJECT:	PROJECT NO.:	APPROX. SCALE:
Adams County, Indiana Multi-Hazard Mitigation Plan	04-319	1"=1.25 mi
TITLE: Earthquake Loss Areas		DATE: 02/05
		EXHIBIT: 6

Adams County Multi-Hazard Mitigation Plan
Planning Committee Meeting

6:30-8:30 pm Thursday, September 23, 2004
Adams County EOC
313 South 1st St., Decatur

AGENDA

1. Overview of the Multi-Hazard Mitigation Plan (MHMP) Requirements
2. Overview of the MHMP Planning Process
3. Identify Critical Facilities
4. Discussion of Local Hazards and Determine which to Study in Detail
5. Identify Data Sources for Hazards
6. Schedule October Meeting

Adams County Multi-Hazard Mitigation Plan
Planning Committee Meeting

6:30-8:30 pm Thursday, September 23, 2004
Adams County EOC Office
313 South 1st St., Decatur

MEETING SUMMARY

Planning Committee Members Present:
Tim Barkey, Adams County Engineer
Dan Elzey, Preble Fire Department
Ed Ford, Adams County Memorial Hospital
Becky Grimm, Adams County EMA
Rob Johnson, Geneva Police Department
John Kleinknight, Geneva Fire Department
Jeff McIntosh, Decatur Police Department
Art Nussbaum, Berne Fire Department
Mary Ogg, Adams County Council
Charles Padgett, Adams County Sheriff's Department
Jan Smith, Decatur Fire Department
Terry Smith, Adams County Health Department

Others Present:
Art Booth, Geneva Fire Department
Sheila McKinley, Christopher Burke Engineering, Ltd. (CBBEL)
Matt Rummel, Christopher Burke Engineering, Ltd. (CBBEL)

1. Overview of the Multi-Hazard Mitigation Plan (MHMP) Requirement
The Disaster Mitigation Act of 2000 (DMA 2000) requires both the state and local communities to prepare for disasters through pre and post disaster planning. This process reinforces the importance of mitigation planning and the need for communities to plan for a disaster before it occurs in order to reduce the physical, social, and economical impact.

The DMA 2000 requires MHMPs to be approved by FEMA before November 1, 2004 in order to qualify for all future project grant funds however; according to the State Emergency Management Agency (SEMA), this is only a "drop dead deadline" for the State. If Adams County experienced a disaster before their MHMP is adopted they will qualify for future project grant funds as long as their MHMP is approved and adopted within the 18 month application period (12 months plus two 90 day extensions).

The intent is to have a draft MHMP for Adams County and participating NFIP communities completed by January 2005. However, it may take as long as 6 months for SEMA and FEMA to approve the plan. Once the plan is approved by SEMA and FEMA, Adams County and participating NFIP communities may adopt the MHMP and begin implementation.

The MHMP is often confused with the Comprehensive Emergency Management Plan (CEMP). Adams County CEMP is complete and currently being reviewed for adoption. Although the CEMP provides some hazard and vulnerability analysis, it does not identify historical community–based mitigation projects, risk assessment, cost of disasters or costs avoided through use of mitigation, and detailed mitigation measures required in the MHMP

There are four components to a MHMP including:
Organize Resources – establish a Planning Committee; coordinate among the various agencies and departments involved with hazard preparedness and/or response; coordinate among neighboring communities and the public; and review and incorporate existing plans, studies, and reports into the MHMP.
Assess Risks – identify all hazards; determine which hazards to study in detail; profile hazard events using HAZUS GIS software; assess vulnerability of community; and estimate potential losses.
Develop Mitigation Strategies – establish hazard mitigation goals and identify and prioritize mitigation actions.
Implement and Monitor Progress – monitor, evaluate and update MHMP; incorporate into existing planning mechanisms; and continue public involvement

2. Overview of the MHMP Planning Process

The Planning Committee is composed of a diverse group of local leaders and decision-makers. Members of the Planning Committee are knowledgeable about various hazards and/or have tools necessary to reduce the impact of the hazards. These members include representation from:

- Planning/Community Development
- Engineering
- Emergency Management
- Public Information/Community Relations
- Public Safety/Police/Fire
- Public Works/Streets/Highway
- Building/Zoning/Code Enforcement
- Parks/Recreation
- Residents/Business Owners/Stakeholders
- NFIP Communities:
    - Berne
    - Decatur
    - Geneva

A 12 month project timeline was distributed to the Planning Committee. This includes 5 months to prepare a draft MHMP, 6 months for SEMA and FEMA to review and comment, and 1 month for local adoption. The participation of the Planning Committee will be predominantly from September 2004 through January 2005.

MHMP PLANNING PROJECT TIMELINE

September 2004

- Assemble Planning Committee
- Planning Committee meeting (#1)
    - Overview of DMA 2000, MHMP requirements
    - Identify critical facilities
    - Discuss all hazards; identify which to study in detail
    - Identify data sources for hazards

October 2004

- Assess Risks:
    - Profile hazards
    - Inventory assets
    - Estimate losses
- Develop Plan:
    - Introduction
    - Community Profile
- Planning Committee meeting (#2)
    - Review hazard data (maps & scenarios)
    - Discuss goals and mitigation strategies

November 2004

- Edits to hazard data and scenarios
- Develop Plan:
    - Hazard Vulnerability Assessment
    - Community Capability Assessment
- Public Participation
- Planning Committee meeting (#3)
    - Discuss goals and mitigation strategies

December 2004

- Develop Plan:
    - Hazard Goals
    - Mitigation Strategies
- Planning Committee meeting (#4, possibly via internet)
    - Review draft plan

January 2005

- Public Participation
- Edits to Plan
- Review by Planning Committee (via internet)
- Submit DRAFT Plan to SEMA & FEMA for review

July 2005

- Edits to Plan based on SEMA & FEMA comments
- Review by Planning Committee (via internet)

August 2005

- Local adoption of Plan
- Submit adopted version of Plan to SEMA & FEMA

3. Identify Critical Facilities

FEMA defines critical facilities as:

a. Structures or facilities that produce, use or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials;
b. Hospitals, nursing homes and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a hazard;
c. Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for flood response activities before, during and after a hazard; and
d. Public and private utility facilities that are vital to maintaining or restoring normal services to areas before, during and after a hazard.

An 11x17 map of critical facilities including emergency facilities, hospitals, schools, power facilities, airports, and dams in Adams County was distributed for the Planning Committee to comment on. The location of these critical facilities came from a national database available through FEMA's HAZUS GIS program and that there may be some errors and omissions. After much discussion regarding the numerous errors and omissions on the critical facilities map, the Planning Committee agreed that the County GIS database would be more accurate. Staff from CBBEL will work with the County GIS person to update the critical facilities map before the next meeting. The Planning Committee requested that utilities (gas, water, sewer, electricity), major transportation routes, medical professional buildings, nursing homes, and juvenile detention facilities be added to the map.

4. Discussion of Local Hazards and Determine which to Study in Detail

The Planning Committee reviewed the list of hazards identified by FEMA and determined which hazards affect Adams County and which hazards they would like to study in detail as part of this MHMP effort. Additional hazards were added to FEMA's list and considered for detailed study. The Planning Committee agreed to study dam failure, earthquake, flood, severe winter storm, tornado, windstorm, hazardous materials (storage and transport), and utilities (gas, sewer, water, and electricity) in detail as part of this planning effort.

List of Hazards	Hazards with Local Impact	Hazards for Detailed Study
Avalanche	No	
Coastal Erosion	No	
Coastal Storm	No	
Dam Failure	**Yes**	**Yes**
Drought	Yes	No
Earthquake	**Yes**	**Yes**
Expansive Soils	Yes	No
Extreme Heat	Yes	No
Flood	**Yes**	**Yes**
Hailstorm	Yes	No
Hurricane	No	
Land Subsidence	Yes	No
Landslide	No	
Severe Winter Storm	**Yes**	**Yes**

Tornado	**Yes**	**Yes**
Tsunami	No	
Volcano	No	
Wildfire	Yes	No
Windstorm	**Yes**	**Yes**
Hazardous Materials *(storage & transport)*	***Yes***	***Yes***
Utilities *(gas, sewer, water, electricity)*	***Yes***	***Yes***
Flight path to Fort Wayne	*Yes*	*No*

Note: Hazards shown in bold will be studied in detail. Hazards shown in italics were added by the Planning Committee

5. Identify Data Sources for Hazards

As noted in the previous discussion, the Planning Committee agreed to study dam failure, earthquake, flood, severe winter storm, tornado, windstorm, hazardous materials (storage and transport), and utilities (gas, sewer, water, and electricity) in detail as part of this MHMP effort. The following data sources were identified:

a. General hazard information – Comprehensive Emergency Management Plan (EMA document); FEMA materials
b. Floods & Dam Failure – Flood Insurance Study (FIS), Flood Insurance Rate Map (FIRM), County GIS data
c. Earthquake – national seismic data
d. Tornadoes & Windstorms – national wind zone data, local tornado paths identified on County map; local newspaper archives
e. Utilities – County GIS data
f. Severe Winter Storm – national weather databases; local newspaper archives
g. Hazardous Materials – County GIS data; Resource Conservation Recovery Act (RCRA) (State database); Community Right To Know (State database); Superfund Amendments and Reauthorization Act (SARA) (State database)

6. Schedule October Meeting

Before the next meeting was scheduled, Becky Grimm asked if there was any other business to discuss or if there is anyone missing from the Planning Committee. A representative from the Monroe Police Department was suggested as well as someone from the County and City of Decatur planning department. Becky offered to find a representative from each before the next meeting.

The next Planning Committee meeting will be held from 6:30-8:30 pm on Tuesday, October 19, 2004 at the Adams County EOC.

Adams County Multi-Hazard Mitigation Plan
Planning Committee Meeting

6:30-8:30 pm Tuesday, October 19, 2004
Adams County EOC
313 South 1st St., Decatur

AGENDA

7. Review Critical Facilities Map and Information
8. Review List of Hazards
9. Review Hazard Maps and Information
10. Review State MHMP Goals
11. Discuss Local Goals
12. Discuss Options for Public Participation
13. Set November Meeting Date

Adams County Multi-Hazard Mitigation Plan
Planning Committee Meeting

6:30-8:30 pm Tuesday, October 19 2004
Adams County EOC Office
313 South 1st St., Decatur

MEETING SUMMARY

Planning Committee Members Present:
Steve Baumann, Adams County Commission
Louise Busse, Adams County Health Department
Ed Ford, Adams County Memorial Hospital
Becky Grimm, Adams County EMA
Jeff McIntosh, Decatur Police Department
Kevin McIntosh, Monroe Police Department
Art Nussbaum, Berne Fire Department
Mary Ogg, Adams County Council
Neil Ogg, Decatur Building and Planning
Charles Padgett, Adams County Sheriff's Department
Terry Smith, Adams County Health Department

Others Present:
Art Booth, Geneva Fire Department
Sheila McKinley, Christopher Burke Engineering, Ltd. (CBBEL)
Mike Werling, Preble Fire Department

1. Review Critical Facilities Map and Information
The Planning Committee reviewed the updated critical facilities maps and noted that the locations of several critical facilities need to be field verified. Members of the Planning Committee agreed to mark up the paper maps and return them to Becky Grimm in about 2 weeks for CBBEL to make the necessary changes.

7. Review List of Hazards
The Planning Committee reviewed the list of hazards to study in detail as part of this planning process. These include: dam failure, earthquake, flood, severe winter storm, tornado, windstorm, hazardous materials, and utilities. No hazards were added or deleted from the list at this time.

8. Review Hazard Maps and Information
The Planning Committee reviewed dam failure, flood, earthquake, and tornado hazard research that has been completed to date.

Information regarding dam failures was gathered from the National Inventory of Dams. Of the 5 dams in Adams County, Saddle Lake Dam is considered to be a "High Potential Hazard" because of it's proximity to Decatur. A failure of the Saddle Lake Dam would most likely result in loss of life as well as lifeline, economic, and environmental losses. There are no known past occurrences of dam failures in Adams County. There was some discussion among the Planning Committee regarding a rather large dam in Celina, OH. Becky Grimm agreed to contact the EMA Director there and gather more information on the dam.

CBBEL used the GIS-based HAZUS program to simulate a 100 and 500 year flood event and an annualized loss (average of 8 probabilistic events including the 100, 250, 500, 750, 1000, 1500, 2000, and 2500 year) for earthquake in Adams County. The results are preliminary and the program will need to be rerun with the updated critical facilities information. The following chart summarizes the HAZUS results.

HAZUS Flood Preliminary Results	HAZUS Earthquake Preliminary Results
• 90% of buildings exposed to flood damage are residential • 112 buildings will be at least moderately damaged, 0 buildings will be completely destroyed • 50,355 tons of debris will be generated • 258 households will be displaced and 383 people will seek temporary shelter from public shelters • $330,000 estimated as the total economic loss	• 90% of buildings exposed to earthquake damage are residential • 877 buildings will be at least moderately damaged, 14 buildings will be completely destroyed • Limited damage anticipated to essential facilities and transportation system • 59 households will be displaced and 13 people will seek temporary shelter from public shelter • $1,970,000 estimates as the total economic loss

The tornado map and information was collected from the National Oceanic Atmospheric Administration (NOAA) and data available from the Adams County EMA. Between March 1953 and November 2002, there have been 14 tornadoes reported in Adams County. The largest tornado recorded was a F4 tornado on April 11, 1965 resulting in $25,000,000 in damage in Adams and surrounding counties.

9. Review State's Mitigation Goals
The following goals are from the State's draft MHMP.

1. Develop an effective public awareness program for the natural hazards that Indiana is most likely to experience

2. Promote economic development consistent with floodplain management, earthquake, and tornado guidelines

3. Use Pre-Disaster Mitigation program to promote recognition of the value of hazard mitigation to public safety and the welfare of the population.

4. Encourage scientific study of natural hazards and the development of data to support mitigation strategies for those hazards that are a threat to Indiana.

5. Develop a program to identify need for warning or monitoring systems (dam structures, river levels, weather conditions) and provide a plan of action to protect communities or individuals from hazards.

6. Maintain an effective State Hazard Mitigation Council that will facilitate implementation of the Indiana Hazard Mitigation Plan, and recommend modifications to the GAR and Governor.

7. Identify mitigation opportunities for long-range planning considerations.

8. Develop a workshop for local mitigation planning.

9. Establish building and zoning codes that support floodplain management, earthquake, and tornado objectives in all counties of Indiana.

10. Identify critical and governmental facilities. Determine methods of protection in hazard prone areas, including relocation, flood proofing, earthquake/wind retrofit, back-up systems.

11. Develop a state-wide hazard mitigation training program for local government officials (i.e. building inspectors, community planners and public works, state agencies, and construction professionals (contractors, architects, designers).

10. Discuss Local Mitigation Goals

The Planning Committee reviewed the list of Mitigation Measures prepared by FEMA and agreed to focus Adams County mitigation goals, objectives, and projects based on these measures. General "all-hazard" goals will be established for each of FEMA's mitigation measures and as appropriate, mitigation objectives and projects will be identified for each hazard in Adams County.

Prior to setting mitigation goals, the Planning Committee discussed existing programs and polices to prevent duplication of resources or efforts. This information will be incorporated in the Community Capability portion of the MHMP.

1. <u>Prevention</u>
   FEMA defines prevention as measures that are designed to keep the problem from occurring or getting worse. Adams County and participating NFIP communities currently have long-range planning, zoning, and subdivision control ordinances that guide or restrict development from known hazardous areas. The all hazard goal for prevention is to lessen the impact and effect of hazards from impacting the health, safety, and welfare of people in Adams County.

2. <u>Property Protection</u>
   FEMA defines property protection as measures that are used to modify buildings subject to hazard damage rather than to keep the hazard away. The Maumee River Basin Commission (MRBC) works to acquire, relocate, elevate, and/or flood proof structures and flood zone areas through the National Flood Insurance Program. The all hazard goal for property protection is to protect new and existing property from the impacts of hazards.

3. <u>Natural Resource Protection</u>
   FEMA defines natural resource protection as opportunities to preserve and restore natural areas and their function to reduce the impact of hazards. Adams County SWCD encourages agricultural landowners to implement filter strips along drainage ditches and setbacks along natural waterways. The City of Berne

is in the process of separating their combined sewer system. The all hazard goal for natural resource protection is to preserve and maintain the function of existing natural resources to reduce the impact of hazards.

4. Emergency Services
   FEMA defines emergency services as measures that protect people during and after a hazard. Adams County has a countywide siren system however there is a need for additional sirens. Weather systems are monitored by the EMA's office in cooperation with the SEMA using the National Weather Service. USGS river gauges on the St Mary and Wabash Rivers as well as field observation by residents and staff monitor changes in water levels. Local TV and radio carry weather warnings and advisories. The all hazard goal for emergency services is to continue to improve emergency services in Adams County.

5. Structural Control Projects
   FEMA defines structural control projects as physical measures used to prevent hazards from reaching a property. Adams County resizes culverts and bridges as resources allow. Increased flooding from the St Mary's River may be caused from the limited opening of the I-69 bridge. Adams County and participating communities have stormwater detention/retention sizing requirements for new development. The all hazard goal for structural control projects is to continue to use structural control projects to minimize the effects of hazards.

6. Public Information
   FEMA defines public information activities as those that advise property owners, potential property owners, and visitors about the hazards, ways to protect themselves and their property from the hazards. There are several education and training programs throughout the County. These include school programs, SWCD programs, service groups, and media outlets (TV, radio, newspaper). The all hazard goal for public information is to expand and improve the type of information that is distributed to the public to reduce the risks associated with a hazard.

11. Discuss Options for Public Participation

The Planning Committee plans to hold a public meeting in January to present the draft MHMP. However, the Committee would like to include comments from the public during the development of the MHMP. Several opportunities were discussed. The Committee decided to publish an article in the newspapers with a couple survey questions that participants can respond to either by email or mail. CBBEL staff agreed to work directly with Becky Grimm to prepare an article in order to get it in the newspapers early-November.

12. Schedule November Meeting

The next Planning Committee meeting will be held from 6:30-8:30 pm on Wednesday, November 17, 2004 at the Adams County EOC.

Adams County Multi-Hazard Mitigation Plan
Planning Committee Meeting

6:30-8:30 pm Wednesday, November 17, 2004
Adams County EOC
313 South 1st St., Decatur

AGENDA

14. Collect Revised Critical Facilities Maps
15. Discuss Newspaper Article and Survey Responses
16. Review Mitigation Goals
17. Discuss Mitigation Projects
18. Discuss Options for Continued Public Participation
19. Discuss Options for Public Meeting

Adams County Multi-Hazard Mitigation Plan
Planning Committee Meeting

6:30-8:30 pm Wednesday, November 17, 2004
Adams County EOC
313 South 1st St., Decatur

MEETING SUMMARY

Planning Committee Members Present:
Tim Barkley, Adams County Engineering Department
Steve Baumann, Adams County Commissioner
Louise Busse, Adams County Health Department
Ed Ford, Adams County Memorial Hospital
Becky Grimm, Adams County Emergency Management Agency
Steve Hampshire, Geneva Town Hall
Rob Johnson, Geneva Police Department
Jeff McIntosh, Decatur Police Department
Art Nussbaum, Berne Fire Department
Mary Ogg, Adams County Council
Neil Ogg, Decatur Building and Planning
Charles Padgett, Adams County Sheriff Department
Mary Shaffer, Monroe
Jan Smith, Decatur Fire Department
Terry Smith, Adams County Health Department

Others Present:
Art Booth, Geneva Fire Department
Sheila McKinley, Christopher B. Burke Engineering, Ltd.
Mike Werling, Preble Fire Department

20. Collect Revised Critical Facilities Maps
Revised Critical Facilities maps were collected from the Planning Committee.

21. Discuss Newspaper Article and Survey Responses
A copy of the media release that was distributed to 9 media outlets was distributed to the Planning Committee. Since the media release was just distributed to media outlets the public has not had sufficient time to comment.

22. Review Mitigation Goals
The Planning Committee reviewed the list of all-hazard goals that were drafted at the last meeting. All-hazard goals were established for each of the six mitigation measures identified by FEMA. The six all-hazard goals are as follows:

<u>Prevention</u> – Continue to lessen the impact and effect of hazards from impacting the health, safety, and welfare of people in Adams County.

Property Protection – Continue to protect new and existing property form the impacts of hazards.

Natural Resource Protection – Continue to preserve and maintain the function of existing natural resources to reduce the impacts of hazards.

Emergency Services – Continue to improve emergency services in Adams County.

Structural Control Projects – Continue to use structural control projects to minimize the effects of hazards

Public Information – Continue to expand and improve the type of information that is distributed to the public to reduce the risks associated with a hazard.

23. Discuss Mitigation Projects
The Planning Committee participated in an extensive exercise to identify mitigation projects suitable for all-hazards, dam failure, earthquake, flood, severe winter storms, tornado and windstorms, hazardous materials, and utility failure. Many of the mitigation project identified are on-going and would benefit from continued support or additional resources. Each mitigation project was discussed and evaluated based on priority (high, medium, low), cost benefit ratio, project location, responsible entity, and funding source. The charts on the following pages summarize the discussion.

24. Discuss Options for Continued Public Participation
Adams County and participating NFIP communities have well-established education and training programs. The Planning Committee agreed that the existing programs were sufficient for multi-hazard mitigation planning efforts.

25. Discuss Options for Public Meeting
As part of this planning process, Adams County and participating NFIP communities need to hold a public meeting. The Planning Committee agreed to host a meeting in February 2005. AT this meeting, the draft MHMP will be presented in an effort to share the goals and mitigation projects as well as obtain additional suggestions from the general public. CBBEL staff agreed to make the arrangements for the public meeting to be held at the 4-H Building.

ALL-HAZARDS MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium C=B, Low C<B)	**Project Location**	**Responsible Entity**	**Funding Source**
Public Education & Awareness	High	Low	Countywide	EMA	Grant Existing budget
Mutual Aid and/or Interagency Agreements	High	Low	Countywide	Agencies involved with emergency services	Existing budget
Critical Facility Protection	High	Medium	Countywide	Critical facilities	Grant (HLS) Private Existing budget Operation expense
Emergency Warning System	High	Low	Countywide	EMA	Grant Existing budget
Power Backup at Critical Facilities	High	Low	Churches, Schools, Community Buildings, designated shelters	Owner Facility Director	Grant Existing budget
Land Use Planning	High	Low	Countywide	Planning	Existing budget
Geographic Information System	Medium	High	Countywide	County	Grant Existing budget
Building Code	High	Low	Countywide	Planning Building Department	Existing budget
Safe Room/Shelter	High	Low	Countywide	EMA Red Cross	Existing budget

DAM FAILURE MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium C=B, Low C<B)	**Project Location**	**Responsible Entity**	**Funding Source**
Emergency Action Plan	High	Low	Dams	Dam Owner DNR	Existing budget Assessment Grant
Inspection and Maintenance Program	High	Medium	Dams	Dam Owner	Existing budget

EARTHQUAKE MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium C=B, Low C<B)	**Project Location**	**Responsible Entity**	**Funding Source**
Seismic Hazard Mapping	Low	High	Countywide	EMA	Grant Existing budget
HAZUS Earthquake Program	Low	High	Countywide	EMA County GIS	Grant Existing budget

FLOOD MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium C=B, Low C<B)	**Project Location**	**Responsible Entity**	**Funding Source**
Acquisition, Relocation, and Elevation	High	Medium	Buildings in flood hazard	UWRBC MRBC	Property owner Grant (PDM, HMGP) Flood insurance

Floodproofing	Medium	Medium	Buildings in flood hazard	UWRBC MRBC	Property owner Grant (PDM, HMGP) Flood insurance

Stormwater Management Program	High	Medium	Urban centers	Planning, Engineering	Existing budget Grant
Community Ratings System	High	Medium	NFIP communities	NFIP coordinator	Existing budget Grant
Structural Flood Control Measures	Medium-Low	Medium	Flooded areas	UWRBC MRBC	Existing budget Grant
Flood Warning System	High	Low	Countywide	EMA County GIS	Existing budget Grant
HAZUS Flood Program	Medium	Medium	Countywide	EMA County GIS	Existing budget Grant
Channel Maintenance	High	Medium	Streams Ditches	SWCD Surveyor MRBC UWRBC	Existing budget Grant
Flood Insurance	High	Medium	Buildings in flood hazard area	Building owner	Owner

SEVERE WINTER STORM MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium C=B, Low C<B)	**Project Location**	**Responsible Entity**	**Funding Source**
Road Maintenance	High	Medium	Countywide	Street Highway	Existing budget Grant
Power Lines (buried)	Low	High	Countywide	Power Company	Utility fees

TORNADO & WINDSTORM MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium	**Project Location**	**Responsible Entity**	**Funding Source**

		C=B, Low C<B)			
Tree Maintenance	Low	Low	Public property, ROW, Utility corridors	Parks, DPW, Utility	Existing budget Utility fee
Tornado Sirens	High	Low	Populated areas	EMA	Grant Existing budget

HAZARDOUS MATERIALS MITIGATION PROJECTS

Project	**Priority** (High, Medium, Low)	**Cost Benefit Ratio** (High C>B, Medium C=B, Low C<B)	**Project Location**	**Responsible Entity**	**Funding Source**
Safety Procedures and Policies	High	Low	Countywide	EMA Company	Existing budget Grant
Employee Training	High	Low	On-site	EMA (SARA Title III) Company	Existing budget Grant
Emergency Plan	High	Low	Countywide	EMA	Existing budget Grant
Transportation	High	Low	Countywide	EMA INDOT	Existing budget Grant
Storage	High	Low	On-site	EMA Company	Existing budget Grant
Disposal	High	Low	Solid waste facilities (none in County)	SWMD County	Existing budget Grant
Industrial Site Buffering	High	Low	On-site	Planning	Existing budget
Facility Security	High	Low	On-site	Facility owner	Grant (HLS) Existing budget

UTILIY FAILURE MITIGATION PROJECTS

Project	**Priority** (High,	**Cost Benefit**	**Project Location**	**Responsible Entity**	**Funding Source**

	Medium, Low)	**Ratio** (High C>B, Medium C=B, Low C<B)			
Water and Sewer	High	Low	Countywide	Utility provider	Existing budget Utility assessment
Power Lines	High	Medium	Countywide	Utility provider	Existing budget Utility assessment
Digging Hotlines	High	Low	Countywide	Utility provider	Existing budget Utility assessment

MEDIA RELEASE

For Immediate Release
Media Release Date: November 17, 2004
Contact: Becky Grimm, Emergency Management Agency (260-724-5320)

How do tornadoes, floods, and severe winter storms affect you?

The Adams County Emergency Management Agency, in cooperation with Adams County, City of Berne, City of Decatur, Town of Geneva, Town of Preble, and Town of Monroe, is preparing a Multi-Hazard Mitigation Plan.

The Disaster Mitigation Act of 2000 (DMA 2000) requires communities to prepare a Multi-Hazard Mitigation Plan in order to be eligible for any future mitigation funding through the State and Federal Emergency Management Agencies. The intent of this planning process is to plan for a disaster before it occurs in order to reduce the physical, social, and economical impact of that disaster.

The flood that occurred in July 2003 and September 2003 were significant events resulting in both personal and property loss for many residents in Adams County. In addition to your personal experience with floods, the Multi-Hazard Mitigation Planning Committee would also like to know if severe winter storms, tornado/windstorms, the storage and transport of hazardous materials, public utility failures, dam failures, and earthquakes have affected you in Adams County.

Please answer the following questions and send your response to Becky Grimm at the Adams County Emergency Management Agency, 313 S. 1st St., PO Box 87, Decatur, IN 46733 or email bgrimm@co.adams.in.us.

1. Have you ever experienced or been impacted by flood, severe winter storm, tornado/windstorm, the storage and transport of hazardous material, public utility failure, dam failure, and/or earthquake (Identify all that apply)
2. Did your experience result in a personal or financial loss? If so, to what extent was the damage?
3. In your opinion, what is the likelihood of a flood, severe winter storm, tornado/windstorm, the storage and transport of hazardous material, public utility failure, dam failure, and/or earthquake occurring in Adams County in the near future? (Identify all that apply)
4. Any other comments you may have regarding local hazards in Adams County.

The Adams County Emergency Management Agency will host a public meeting early in 2005 to present the DRAFT Multi-Hazard Mitigation Plan to the public and gather additional public input. The meeting date and time is not available at this time but will be widely published in the near future.

---- End ----

MEDIA RELEASE

For Immediate Release
Media Release Date: April 6, 2005
Contact: Ivan Nevil, Emergency Management Agency (260-724-5320)

Public Presentation of the Adams County Multi-Hazard Mitigation Plan Scheduled for 8 pm Monday, April 18

The Adams County Emergency Management Agency, in cooperation with Adams County, City of Berne, City of Decatur, Town of Geneva, Town of Preble, and the Town of Monroe has prepared a Multi-Hazard Mitigation Plan. This Plan assesses the risk and vulnerability of these communities for flooding, severe winter storms, tornado/windstorms, hazardous materials, utility failure, dam failure, and earthquake.

The Disaster Mitigation Act of 2000 (DMA 2000) requires communities to prepare a Multi-Hazard Mitigation Plan in order to be eligible for any future mitigation funding through the State and Federal Emergency Management Agencies. The intent of this planning process is to plan for a disaster before it occurs in order to reduce the physical, social, and economical impact of that disaster.

The draft Adams County Multi-Hazard Mitigation Plan will be presented at a public meeting on Monday, April 18 at 8 pm at the Adams County Emergency Operations Center (basement of 313 South 1st St.) in Decatur. Topics covered during this public presentation will include: an overview of the planning requirements; a summary of the risk assessment and vulnerability analysis; and proposed mitigation projects for prevention, property protection, natural resource protection, emergency services, structural control projects, and public information.

For additional information please contact Ivan Nevil, Emergency Management Agency Director for Adams County at 260-724-5320 or ema@co.adams.in.us or Sheila McKinley, Senior Resource Planner for Christopher B. Burke Engineering, Ltd. at 317-266-8000 or smckinley@cbbel-in.com

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Tuesday, April 19, 2005

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Quick Poll

NEWS

New hazard mitigation plan is unveiled

Just past the 40-year anniversary of the 1965 Palm Sunday tornado and less than two years after the worst flood in recorded history, Adams County now has a multi-hazard mitigation plan (MHMP).

City soldier seeks help for Afghan boy

From The AP and staff reports

Cat pierced by arrow dies of infection

EVANSVILLE, Ind. (AP) - A stray cat found with a 20-inch arrow protruding from his chest and back has died from complications caused by an infection.

PLANNERS ... Seven of the 29 people who helped create the Adams County Multi-Hazard Mitigation Plan look at maps of the county. Seated are Sheila McKinley, professional planner from Indianapolis, and Ivan Nevil, county EMA director; standing, Rod Renkenberger, executive director, Maumee River Basin Commission; Tim Barkey, county engineer; Chuck Padgett, sheriff; Jan Smith, Decatur fire chief; and Russell Cook, Monroe fire chief. (Photo by Eric Mann)

More news headlines...

SPORTS

Braves bounce Concordia, 12-4

What do you think of the web site?

- Love it!
- I Like It
- It's ok
- No Comment

Vote

Bellmont was out-hit 10-9 in its varsity baseball game Monday by the Concordia Cadets, but the Braves tripled the number of runs scored by the Fort Wayne team in winning the non-conference game, 12-4.

Squaws win in five innings...Light ties school record for shutouts

Despite being ill, Bellmont hurler Ashley Light shut down the Leo Lions 10-0 in five innings (game called due to the mercy rule) on two hits and in the process tied a BHS record for most pitching shutouts in a career.

Lady Jets sweep triangular with Southern Wells, Lakeview

PONETO - Adams Central scored a victory in the girls track triangular meet at Southern Wells Monday evening while the boys team finished second. Lakeview Christian of Marion was third in both meets.

More sports headlines...

New hazard mitigation plan is unveiled

BY ERIC MANN

Just past the 40-year anniversary of the 1965 Palm Sunday tornado and less than two years after the worst flood in recorded history, Adams County now has a multi-hazard mitigation plan (MHMP).

The county, one of the first in Indiana to have such a plan provisionally approved by the State Emergency Management Agency, will now seek to have it adopted by the county commissioners at their April 25 meeting and by the city councils of Decatur and Berne and the town councils of Monroe and Geneva.

The plan covers 60 pages and was developed through a series of meetings conducted by 28 community leaders from around the county, plus a professional environmental planner from Christopher Burke Engineering of Indianapolis, which has done the same sort of work in about 10 other counties in Indiana.

The hazard plan lists seven potential disasters that could happen here and ranks them in the following order:

Floods, which have a "highly likely" probability, with 12 to 24 hours of warning and more than a one-week duration of the disaster. The plan says rural parts of the county, plus Decatur and Geneva, have the highest likelihood of flood damage.

Severe winter storms, which are "likely," with 12 to 24 hours of warning and more than a one-week duration.

Tornadoes or windstorms, which are "possible," with less than six hours of warning and less than six hours of duration.

Hazardous materials incidents, which are "possible," with less than six hours of warning and less than a one-day duration.

Utility failures, which are "unlikely," with less than six hours of warning and less than a one-week duration.

Dam failures, which are "unlikely," with less than six hours of warning and less than six hours of duration. There are five dams in the county, three near Geneva.

Earthquakes, which are "unlikely," with less than six hours of warning and less than six hours of duration.

The introduction to the plan says, in part, "the purpose of the mitigation planning is for state [and] local governments to identify natural hazards, identify actions and activities to reduce any losses from those hazards, and establish a coordinated process to implement the plan, taking advantage of a wide range of resources."

With flooding as the primary hazard, the plan refers to the community ratings system (CRS) that is part of the National Flood Insurance Program and says, "Flood insurance premium rates are discounted to reflect the reduced flood risk resulting from community actions that meet the three goals of the CRS":

€ Reduce flood losses.

€ Facilitate accurate insurance rating.

€ Promote education and awareness of flood insurance.

Savings in flood insurance premiums are proportional to points assigned to various activities. A minimum of 500 points is necessary to enter the CRS and receive a five percent flood insurance premium discount. The plan could contribute as many as 294 points.

Only Decatur currently participates in the CRS. The city has Class Nine recognition in the CRS, [so] flood insurance policyholders receive a five percent discount on their insurance premiums." One of the aims of this plan is to increase CRS participation throughout the county.

Among the goals of the MHMP are land use planning and zoning, flood plan management, use of the geographic information system, establishing "safe rooms and community shelters," expanding use of CRS, maintaining safety of hazardous materials, tree maintenance so there are fewer problems with falling trees and limbs breaking power lines, building protection, more warning sirens (Decatur has six and should have eight, says the plan), more backup generators for emergency power, improving storm water drainage (as is being done in Decatur, Berne, Geneva, and Monroe), and greater public education.

The planning committee will meet annually to see how the plan is working; updates of the MHMP are expected every five years.

Adams County
IN Depth Profile

County
Indiana
Region
IEDC NW
Create a Region

Adams County, Indiana

Named in 1836 in honor of sixth U.S. president John Quincy Adams

County Seat: Decatur
Largest City: Decatur (pop in 2003: 9,459)
Population per Sq. Mile: 99.0 Sq. Miles: 339.4
Link to County's in-map.net Site

Population Over Time	Number	Rank in State	Percent of State	Indiana
Yesterday(1990)	31,095	44	0.6%	5,544,156
Today(2003)	33,592	48	0.5%	6,195,643
Tomorrow(2010 proj.)	33,458	47	0.5%	6,417,198
Percent Change 1990 to 2000	8.1%	43		9.7%

Sources: US Census Bureau; Indiana Business Research Center

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Components of Population Change in 2003	Number	Rank in State	Percent of State	Indiana
Net Domestic Migration 2002 to 2003	-141	65		1,019
Net International Migration 2002 to 2003	9	59		11,147
Natural Increase (births minus deaths)	264	21	1.0%	27,045

Source: US Census Bureau

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Population Estimates by Age in 2003	Number	Rank in State	Pct Dist. in County	Pct Dist. in State
Preschool (0 to 4)	2,740	38	8.2%	6.9%
School Age (5 to 17)	7,654	39	22.8%	18.9%
College Age (18 to 24)	3,337	48	9.9%	10.2%
Young Adult (25 to 44)	8,195	53	24.4%	28.0%
Older Adult (45 to 64)	7,192	53	21.4%	23.6%
Older (65 plus)	4,474	47	13.3%	12.3%
Median Age	33.1			Median Age = 35.5

Sources: US Census Bureau; Indiana Business Research Center

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Population Estimates by Race or Hispanic Origin in 2003	Number	Rank in State	Pct Dist. in County	Pct Dist. in State
American Indian or Alaska Native Alone	61	56	0.2%	0.3%
Asian Alone	68	62	0.2%	1.2%
Black Alone	72	64	0.2%	8.6%
Native Hawaiian and Other Pac. Isl. Alone	11	34	0.0%	0.0%
White Alone	33,243	47	99.0%	88.9%
Two or More Race Groups	137	58	0.4%	1.0%
Hispanic or Latino(can be of any race)				
Non-Hispanic or Latino	32,538	49	96.9%	96.1%
Hispanic or Latino	1,054	31	3.1%	3.9%

Source: US Census Bureau

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Household Types	Number	Rank in State	Pct Dist. in County	Pct Dist. in State
Households in 2000 (Includes detail not shown below)	11,818	50	100.0%	100.0%
Married With Children	3,562	42	30.1%	23.8%
Married Without Children	3,726	54	31.5%	29.8%
Single Parents	867	53	7.3%	9.1%
Living Alone	2,833	48	24.0%	25.9%

Source: US Census Bureau

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Housing	Number	Rank in State	Pct Dist. in County	Pct Dist. in State
Total Housing Units in 2003 (estimate)	12,701	52	100.0%	100.0%
Total Housing Units in 2000 (includes vacant units)	12,404	52	100.0%	100.0%
Owner Occupied (Pct. distribution based on all housing units) Median Value (2000)	9,095 $85,400	51 48	73.3% --	65.9% --
Renter Occupied (Pct. distribution based on all housing units) Median Rent (2000)	2,723 $393	48 80	22.0% --	26.3% --

Source: US Census Bureau

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Education	Number	Rank in State	Percent of State	Indiana
School Enrollment (2003/2004 Total Reported)	4,969	58	0.5%	1,040,061
Public	4,946	57	0.5%	1,010,492
Private	23	56	0.1%	29,569
High School Graduates (2003/2004)	435	35	0.8%	56,222
Going on to Higher Education	338	34	0.8%	43,805
4-year	259	31	0.8%	32,572
2-year	37	58	0.5%	7,052
Voc/tech.	42	31	1.0%	4,181
Adults (25+ in 2000 Census)	20,158	50	0.5%	3,893,278
with High School diploma or higher	80%	57		82.1%
with B.A. or higher degree	10.7%	64		19.4%

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Sources: Indiana Department of Education; US Census Bureau

Income and Poverty	Number	Rank in State	Percent of State	Indiana
Per Capita Personal Income (annual) in 2002	$23,512	65	83.9%	$28,032
Median Household Income in 2002	$41,489	38	98.8%	$41,973
Poverty Rate in 2002	10.1%	30	105.2%	9.6%
Poverty Rate among Children under 18	14.3%	14	120.2%	11.9%
Welfare (TANF) Monthly Average Families in 2002	93	61	0.2%	47,459
Foodstamp Recipients in 2002	1,317	60	0.3%	395,444
Free and Reduced Fee Lunch Recipients in 2004	1,581	56	0.4%	372,503

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Sources: U.S. Bureau of Economic Analysis; US Census Bureau; Indiana Family Social Services Administration;
Indiana Department of Education

Health and Vital Statistics in 2002	Number	Rank in State	Percent of State	Indiana
Births	615	32	0.7%	84,839
Births to Teens	46	52	0.5%	9,701
Deaths	295	53	0.5%	55,123

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Source: Indiana State Department of Health

Labor Force in 2003	Number	Rank in State	Percent of State	Indiana
Total Resident Labor Force	15,857	50	0.5%	3,187,734
Employed	15,183	47	0.5%	3,024,367
Unemployed	674	64	0.4%	163,367
Unemployment Rate	4.3	71	84.3%	5.1
December 2004 Unemployment Rate	**4.3**	**69**	**86.0%**	**5.0**

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Source: Bureau of Labor Statistics; Indiana Department of Workforce Development

Employment and Earnings by Industry in 2002 (NAICS)	Employment	Pct Dist. in County	Earnings ($000)	Pct Dist. In County	Avg. Earnings Per Job
Total by place of work	22,104	100.0%	$549,968	100.0%	$24,881
Wage and Salary	15,066	68.2%	$394,770	71.8%	$26,203
Farm Proprietors	1,226	5.5%	-$7,123	-1.3%	-$5,810
Nonfarm Proprietors	5,812	26.3%	$67,570	12.3%	$11,626
Farm	1,429	6.5%	-$3,308	-0.6%	-$2,315
Nonfarm	20,675	93.5%	$553,276	100.6%	$26,761
Private	18,496	83.7%	$485,075	88.2%	$26,226
Accomodation, Food Serv.	1,141	5.2%	$10,497	1.9%	$9,200
Arts, Ent., Recreation	178	0.8%	$1,113	0.2%	$6,253
Construction	2,111	9.6%	$38,166	6.9%	$18,080
Health Care, Social Serv.	Data not available due to BEA non-disclosure requirements.				
Information	311	1.4%	$9,664	1.8%	$31,074
Manufacturing	6,254	28.3%	$268,254	48.8%	$42,893

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Employment & Earnings
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Professional, Tech. Serv.	490	2.2%	$11,494	2.1%	$23,457
Retail Trade	2,433	11.0%	$39,783	7.2%	$16,351
Trans., Warehousing	Data not available due to BEA non-disclosure requirements.				
Wholesale Trade	485	2.2%	$15,398	2.8%	$31,748
Other Private (not above)	3,089*	14.0%*	$47,376*	8.6%*	$15,337*
Government	2,179	9.9%	$68,201	12.4%	$31,299

Source: US Bureau of Economic Analysis

* These totals do not include county data that are not available due to BEA non-disclosure requirements.

Assessed Property Value in 1999 (for taxes payable in 2000)	Value	Rank in State	Pct Dist. in County	Pct Dist. in State
Assessed Value by Property Class	$292,952,330	48	100.0%	100.0%
Commercial & Industrial	$111,557,910	37	38.1%	43.2%
Residential	$100,802,280	49	34.4%	41.5%
Agricultural	$71,766,530	27	24.5%	9.6%
Utilities	$8,825,610	73	3.0%	5.6%
Total Assesed Value Per Capita	$8,872	46		

Source: The State Board of Tax Commissioners

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Residential Building Permits in 2003	Units	Pct Dist. in County	Pct Dist. in State	Cost ($000)	State Cost ($000)
Total Permits Filed	98	100.0%	100.0%	$9,216	$5,392,722
Single Family	98	100.0%	80.9%	$9,216	$4,859,081
Two Family	0	0.0%	3.7%	$0	$137,119
Three & Four Family	0	0.0%	2.1%	$0	$58,920
Five families and More	0	0.0%	13.3%	$0	$337,602

Source: US Census Bureau (Greene County totals are not included as it does not currently issue building permits.)

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Commuting Patterns - Top 5 in 2002					
Into Adams FROM	Number	Percent	Out of Adams TO	Number	Percent
All Areas	3,256	14.3%	All Areas	3,825	16.4%
Jay County	923	4.1%	Allen County	2,523	10.8%
Allen County	676	3.0%	Wells County	648	2.8%
Wells County	638	2.8%	Jay County	107	0.5%
Ohio (State)	392	1.7%	Ohio (State)	96	0.4%
Out of state	107	0.5%	Out of state	84	0.4%

Source: Indiana Department of Revenue

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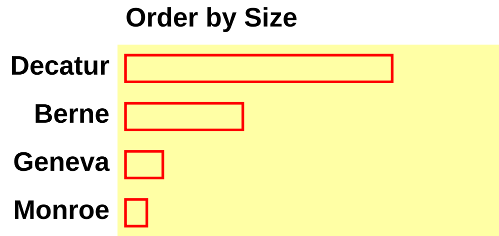
Cities and Towns in Adams County

	Population in 2003	% of County
Berne	4,121	12.3%
Decatur	9,459	28.2%
Geneva	1,335	4.0%
Monroe	732	2.2%



Links to Maps:
Census Tract Boundary Map of Adams county
Tiger Mapping Service Map of Area
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County Profiles is a component of **STATS Indiana**, a web-based information service of the State of Indiana and the Indiana Department of Commerce, developed and maintained by the Indiana Business Research Center at Indiana University's Kelley School of Business.
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CRITICAL FACILITIES	NFIP COMMUNITY
AIRPORTS	
SPRUNGERS SO ADAMS COUNTY AIRS	BERNE
BLOMENBERG	DECATUR
DECATUR HI-WAY	DECATUR
GAGE	DECATUR
HOLT FIELD	ADAMS CO.
BROADCAST	
CELL TOWER - CEN	GENEVA
DAMS	
LAKE OF THE WOODS DAM	GENEVA
RAINBOW LAKE DAM	GENEVA
MEYER LAKE DAM	ADAMS COUNTY
SADDLE LAKE DAM	DECATUR
DONNALLY LAKE DAM	GENEVA
EOC	
ADAMS CO. CIVIL DEFENSE	ADAMS COUNTY
EMER OP CENTER/COUNTY JAIL	DECATUR
BERNE EMS GARAGE	BERNE
GOVERNMENT	
ADAMS CO SERVICE COMPLEX	DECATUR
GENEVA CITY HALL	GENEVA
BERNE CITY HALL	BERNE
FIRE DEPARTMENTS	
CITY FIRE DEPT	DECATUR
FIRE DEPT	DECATUR
PREBLE FIRE DEPARTMENT	DECATUR
GENEVA FIRE DEPARTMENT	GENEVA
BERNE FIRE DEPT	BERNE
MONROE FIRE STATION`	MONROE
HAZARDOUS MATERIALS	
BING-LEAR MFG. GROUP-BERNE	BERNE
CENTRAL SOYA CO. INC.	DECATUR
HAMILITON FNDY.& MACHINE CO. DECATUR CAS	DECATUR
FLEETWOOD MOTOR HOMES OF INDIANA INC. 44	DECATUR
FLEETWOOD MOTOR HOMES OF INDIANA INC. 52	DECATUR
GOLD SHIELD OF INDIANA INC. 43-2	DECATUR
GILPIN IRONWORKS	DECATUR
SILBERLINE MFG. CO. INC.	DECATUR
THUNDERBIRD PRODS.	DECATUR
ELKHART PRODS. CORP.	GENEVA

STRICK CORP.	MONROE
MEDICAL FACILITIES	
ADAMS COUNTY MEMORIAL HOSPITAL-ECU	DECATUR
CHALET VILLAGE HEALTH AND REHABILITATION CENTER	BERNE
Swiss Village Inc.	BERNE
Woodcrest Nursing Center	DECATUR
ADAMS COUNTY MEMORIAL HOSPITAL	DECATUR
County Home Nursing Home	DECATUR
Mid-Wife Clinic	
POLICE	
CITY POLICE DEPT	DECATUR
GENEVA POLICE DEPT	GENEVA
BERNE POLICE DEPT	BERNE
POTABLE WATER	
MONROE PUBLIC WATER SUPPLY	MONROE
POWER STATIONS	
AEP Substation	BERNE
AEP South Berne Substation	BERNE
AEP Substation	ADAMS COUNTY
AEP Power Station	ADAMS COUNTY
SCHOOLS	
Blue Creek Amish School	BERNE
Brookside Amish School	BERNE
Clearview AMish School	BERNE
Faith Christian Acadamy	BERNE
Lincoln Amish School 2	BERNE
Maple Leaf	BERNE
Plain View Amish School	BERNE
Prairie School	BERNE
South East Amish School	BERNE
St Joseph Elementary School	DECATUR
St Peter Immanuel Lutheran School	DECATUR
Wyneken Memorial Lutheran School	DECATUR
Zion Lutheran School	DECATUR
Eagle Creek Amish School	GENEVA
Jefferson Parochial Amish School	GENEVA
West Wabash School	GENEVA
Countryside School	MONROE
Oak Grove Amish School	MONROE
Pleasant Valley	MONROE
Shady Lane School	MONROE
Swiss Valley	MONROE

Winchester Amish School C/O Girod	MONROE
Fairview Amish School	MONROE
Hickory Grove School	GENEVA
Limberlost Creek Amish	GENEVA
Lone Pine School	GENEVA
Maple Lane School	MONROE
Pleasant Mills Schools	DECATUR
South Adams Parochial	GENEVA
Springhill School	BERNE
Twin Oak School	GENEVA
White Oak Ridge	GENEVA
Adams Central Elementary School	MONROE
Adams Central High School	MONROE
Adams Central Middle School	MONROE
Bellmont Middle School	DECATUR
Bellmont Senior High School	DECATUR
Monmouth Elementary School	DECATUR
Northwest Elementary	DECATUR
Southeast Elementary School	DECATUR
South Adams Elementary School	BERNE
South Adams Jr-Sr High School	BERNE
South Adams Middle School	GENEVA
Amish School (from County)	ADAMS COUNTY
Amish School (from County)	ADAMS COUNTY
WASTE-WATER TREATMENT PLANTS	
BERNE MUNICIPAL WWTP SITE 1	BERNE
DECATUR MUNICIPAL SEWAGE TREATMENT PLANT	DECATUR
GENEVA MUNICIPAL WWTP	GENEVA
GENEVA WWTP	GENEVA

Number of Critical Facilities Exposed to Hazards

	Flood	Severe Winter Storm	Tornado/Wind Storm	Hazardous Materials	Utility Failure	Dam Failure	Earthquake
Dams		5	5	5	5	5	5
Airports	1	5	5	5	5		5
Broadcast Facilities		1	1	1	1		1
Potable Water		1	1	1	1		1
Emergency Operation Centers		3	3	3	3		3
Fire Departments		6	6	6	6		6
Hazardous Materials		11	11	11	11		11
Medical Facilities	1	7	7	7	7		7
Police Stations		3	3	3	3		3
Power Facilities		4	4	4	4		4
Schools	2	45	45	45	45		45
Wastewater Treatment Plan		4	4	4	4		4
TOTAL	**4**	**95**	**95**	**95**	**95**	**5**	**95**

(Source: HAZUS-MH)

Replacement Value of Critical Facilities Exposed to Hazards (Thousands of dollars)

	Flood	Severe Winter Storm	Tornado/Wind Storm	Hazardous Materials	Utility Failure	Dam Failure	Earthquake
Dams	$0	$8,750	$8,750	$8,750	$8,750	$8,750	$8,750
Airports	$5,613	$28,067	$28,067	$28,067	$28,067	$0	$28,067
Broadcast Facilities	$0	$103	$103	$103	$103	$0	$103
Potable Water	$0	$34,299	$34,299	$34,299	$34,299	$0	$34,299
Emergency Operation Centers	$0	$264	$264	$264	$264	$0	$264
Fire Departments	$0	$3,708	$3,708	$3,708	$3,708	$0	$3,708
Hazardous Materials	$0	$745	$745	$745	$745	$0	$745
Medical Facilities	$7,210	$50,470	$50,470	$50,470	$50,470	$0	$50,470
Police Stations	$0	$4,326	$4,326	$4,326	$4,326	$0	$4,326
Power Facilities	$0	$6,000	$6,000	$6,000	$6,000	$0	$6,000
Schools	$1,030	$23,175	$23,175	$23,175	$23,175	$0	$23,175
Wastewater Treatment Plan	$0	$274,392	$274,392	$274,392	$274,392	$0	$274,392
TOTAL	**$13,853**	**$434,299**	**$434,299**	**$434,299**	**$434,299**	**$8,750**	**$434,299**

(Source: HAZUS-MH)

Total Number of Buildings Exposed to Hazard in Adams County

	Flood	Severe Winter Storm	Tornado/Wind Storm	Hazardous Materials	Utility Failure	Dam Failure	Earthquake
Residential	180	9,346	9,346	9,346	9,346	5	9,346
Commercial	22	32	32	32	32		32
Industrial		8	8	8	8		8
Agricultural							
Religious							
Governmental		3	3	3	3		3
Educational		45	45	45	45		45
TOTAL	**202**	**9,434**	**9,434**	**9,434**	**9,434**	**5**	**9,434**

(Source: HAZUS-MH)

Total Replacement Value of Buildings Exposed to Hazards in Adams County (Millions of Dollars)

	Flood	Severe Winter Storm	Tornado/Wind Storm	Hazardous Materials	Utility Failure	Dam Failure	Earthquake
Residential	$32	$1,683	$1,683	$1,683	$1,683	$1	$1,683
Commercial	$126	$77	$77	$77	$77	$0	$77
Industrial	$0	$31	$31	$31	$31	$0	$31
Agricultural	$0	$0	$0	$0	$0	$0	$0
Religious	$0	$0	$0	$0	$0	$0	$0
Governmental	$0	$13	$13	$13	$13	$0	$13
Educational	$0	$21	$21	$21	$21	$0	$21
TOTAL	**$158**	**$1,825**	**$1,825**	**$1,825**	**$1,825**	**$1**	**$1,825**

(Source: HAZUS-MH)

PROMULGATION AUTHORITY INFORMATION

Adams County
Steve Baumann, County Commissioner
Doug Bauman, County Commissioner
Ed Coil, County Commissioner

City of Berne
John Minch, Mayor

City of Decatur
Fred Isch, Mayor

Town of Geneva
Steve Hampshire, Town Manager