Mitigation Plan Review

reference manual

Emergency Management Institute
Course Code: E-293

FEMA

National Emergency Training Center, Emmitsburg, Maryland

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Mitigation Plan Review

National Emergency Training Center
Emergency Management Institute

Course E293

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Unit 1: Course Introduction

FEMA

Intent of this training

Training conducted with FEMA Region staff is intended to:

Expand cadre of FEMA plan reviewers *in anticipation of a substantial influx of local hazard mitigation plans;*

Develop consistent interpretations of what can be required of communities *regarding mitigation planning requirements per the Disaster Mitigation Act of 2000, aka DMA 2000; and*

Identify ways to help communities improve planning capabilities and results *for current and future mitigation planning efforts.*

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DMA 2000 "fun facts"

General Information

The Disaster Mitigation Act of 2000 (DMA 2000)
was signed by the President (Public Law 106-390) on October 30, 2000; and
was intended to facilitate cooperation between state and local authorities across a broad spectrum of mitigation activities.

Section 322 of the Act specifically:
addresses mitigation planning at the state and local levels;
reinforces the importance of pre-disaster mitigation planning; and
promotes sustainability as a strategy for disaster resistance.

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DMA 2000 “fun facts”

General Information

Commonly accepted emergency management terminology defines the phrase “pre-disaster mitigation planning” as …

… “coordination of actions taken prior to a hazard event to reduce injuries, deaths, property damage, economic losses, and degradation of natural resources during and following natural or manmade hazard events”.

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DMA 2000 “fun facts”

General Information

Recommendations resulting from DMA 2000 compliant pre-disaster mitigation planning are typically focused on:

physical projects that reduce risk from natural hazards;
changes in land development regulations such as zoning and building codes;
public education programs; and
addressing information and data deficiencies needed to develop the plans.

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DMA 2000 “fun facts”

General Information

To implement the DMA 2000 requirements, FEMA prepared an Interim Final Rule (aka “the Rule”), published in the Federal Register on February 26, 2002 (at 44 CFR Parts 201 and 206), which established planning and funding criteria for states, tribes, and local governments.

The Interim Final Rule will eventually be amended as a Final Rule but that work will not begin until after November 1, 2004.

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DMA 2000 “fun facts”

General Information

Guidance created by FEMA HQ (e.g., Multi-hazard Mitigation Planning Guidance, the State and Local Mitigation Planning How-to Guides, etc.) provides meaningful background and clarification regarding the intent of and methodology to meet the requirements of the Rule.

But, the Rule is THE Rule.

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DMA 2000 “fun facts”

State Hazard Mitigation Planning

DMA 2000 established a pre-disaster mitigation program and required that a FEMA approved standard state hazard mitigation plan be in place by November 1, 2004 …

… for a state to continue to be eligible to receive Hazard Mitigation Grant Program (HMGP) funding or Public Assistance (PA) under the recovery categories of the Stafford Act for disasters declared after November 1, 2004.

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DMA 2000 “fun facts”

State Hazard Mitigation Planning

DMA 2000 also identifies new requirements that allow HMGP funds to be used for planning activities and increases the amount of HMGP funds available to states that have developed and received FEMA approval of a comprehensive enhanced state hazard mitigation plan prior to the declaration of a disaster …

… from a maximum of 7½ percent up to a maximum of 20 percent of the total disaster declaration funding.

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DMA 2000 “fun facts”

State Hazard Mitigation Planning

State governments have certain responsibilities for implementing Section 322 via activities at the state level including:

- *preparing and submitting a “standard plan” (preparing and submitting an “enhanced plan” is an option); and*
- *reviewing and updating the state mitigation plan every three years.*

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DMA 2000 “fun facts”

State Hazard Mitigation Planning

State governments also have responsibilities under Section 322, for supporting activities at the local level including:

- *providing technical assistance and training to local governments to assist them in applying for HMGP grants; and*
- *supporting the development of local hazard mitigation plans.*

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DMA 2000 “fun facts”

Local Hazard Mitigation Planning

DMA 2000 also required that individual communities have an approved local hazard mitigation plan in place …

… to be eligible for project grants under HMGP for disasters declared after November 1, 2004 and other grant programs such as the Pre-Disaster Mitigation Program (PDM).

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DMA 2000 “fun facts”

Local Hazard Mitigation Planning

“Communities” as defined in DMA 2000 local mitigation plan requirements typically include counties, local municipalities and tribal governments (✶) …

… but can also include other local agencies and organizations (school systems, transportation authorities, public utilities, etc.)…

… that can participate as a subapplicant or subgrantee to their respective states.

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DMA 2000 “fun facts”

Local Hazard Mitigation Planning

A local mitigation plan can apply to:

*a **single jurisdiction**; or*

***multiple jurisdictions** within a county, watershed, regional planning district (e.g., multi-county plans), etc. as long as each jurisdiction participated in the planning process. These plans are referred to as “multi-jurisdictional” pre-disaster mitigation plans.*

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DMA 2000 “fun facts”

Local Hazard Mitigation Planning

Local governments have certain responsibilities for implementing Section 322, including:

preparing and submitting a local plan;

monitoring projects; and

reviewing and updating the mitigation plan every five years.

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DMA 2000 "fun facts"

Tribal Hazard Mitigation Planning

Tribal governments have similar responsibilities for implementing Section 322, but have the option of submitting their tribal hazard mitigation plan as:

- *a **state enhanced** hazard mitigation plan;*
- *a **state standard** hazard mitigation plan*
- *a **local** hazard mitigation plan; or*
- ***all of the above**.*

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Approach to the reviews

The plan review process is structured to provide:

1. ***Consistent interpretations of the relevant regulations** i.e., the Rule (see full copy in Unit 1 of the Reference Manual) …*

   *… focusing primarily on a **quantitative** review of local hazard mitigation plans (see discussion of **Required Revisions**).*

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Approach to the reviews

The plan review process is structured to provide:

2. ***Meaningful guidance for planners and their respective communities*** *to not only meet the minimum regulatory requirements but realize maximum reduction of risks from natural hazards …*

   … covering the ***qualitative*** *aspects of plan reviews (see discussion of* ***Recommended Revisions****).*

Roles and Responsibilities

FEMA Headquarters (aka FEMA HQ) *– Development and implementation of the DMA 2000 via the Rule via the FEMA Regional Offices*

FEMA Region Offices *– 10 autonomous offices covering all states and territories of the United States with specific responsibility for review and approval of state, tribal and local DMA 2000 hazard mitigation plans*

Roles and Responsibilities

State Hazard Mitigation Offices *– Responsible for:*

- *development of a state-wide hazard mitigation plan;*
- *support for tribal and local planning efforts;*
- *preliminary reviews of tribal and local DMA 2000 hazard mitigation plans (in some FEMA Regions); and*
- *review and approval of tribal and local DMA 2000 hazard mitigation plans once "managing state" status is attained*

Individual Communities *– Development of single or multi-jurisdictional DMA 2000 hazard mitigation plans*

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Roles and Responsibilities

URS *– On-call technical support to FEMA Regional Offices under the Hazard Mitigation Technical Assistance Program IDIQ contract for plan reviews and at times to states and individual communities for plan development (but under the ultimate supervision and direction of FEMA HQ)*

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Plan Review Terminology

Crosswalk – The *Local Hazard Mitigation Plan Review Crosswalk* (as revised in March 2004) developed from the *Rule* and listing all the *Requirements* / *Elements* that *shall / should* be included in the plan (see the Crosswalk section of the Reference Manual)

Requirements – Wording quoted directly from the *Rule,* all of which must be successfully addressed for the *Plan* to be approved

Elements – Questions that break down the *Requirements* into component parts, all of which must be successfully addressed in the plan for the *Requirement* to be approved

Plan Review Terminology

Shall – Rule *Requirements* that must be addressed in the plan. Revisions that are indicated for *Elements* under these *Requirements* are considered as ***Required Revisions***

Must = *Shall (!)*

Should – Rule *Requirements* that are encouraged to be addressed in the plan but not mandatory for approval. Revisions that are indicated for *Elements* under these *Requirements* are considered as ***Recommended Revisions***

Local Plan Review Procedures

DMA 2000 Local Plan Review Background Information

Page 1 of the *Crosswalk* should be completed to the best of your ability with information provided in the plan or obtained from the community or State (including NFIP Participation information at the bottom of page 1).

Each Region may have their own way for adding names, titles and dates in the middle of page 1 and those preferences should be provided to the reviewer prior to beginning the review.

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Local Plan Review Procedures

DMA 2000 Local Plan Review

Then, starting on Page 3 of the *Crosswalk*, skim through the whole plan (or one of the major divisions of the plan – i.e., Prerequisite(s) / Planning Process / Risk Assessment / Mitigation Strategies / Plan Maintenance Process) to quickly determine if the *Elements* listed in the *Crosswalk* are addressed or included in some way in the document.

As you go through this first pass at reading the plan, complete the second column ("Location in the Plan") of the *Crosswalk* for each *Element / Requirement* so you can easily find it again.

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Local Plan Review Procedures

DMA 2000 Local Plan Review (continued)

Next, go back and determine if the passage(s) you located in your first pass through the plan fully addresses the questions posed under each *Element* while avoiding the "(e.g., …) trap".

If the answer is ***yes***, score that *Element* with an 'S' for *Satisfactory* (or *Met* for the *Prerequisites*). To the extent practical, you can add comments regarding how you felt the plan met each individual *Element* receiving a 'S' score.

See the example at the bottom of instructions page for the *Crosswalk* in the Reference Manual.

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Local Plan Review Procedures

DMA 2000 Local Plan Review (continued)

If the answer is ***no***, score that *Element* with an 'N' for *Needs Improvement* (or *Not Met* for the *Prerequisites*). For each 'N' score, you must (shall!) provide comment(s). Comments need to provide clear guidance to communities regarding the specific improvements they need to make to their plans. This may be the only avenue available for you to communicate with the communities.

We recommend that you first provide a brief summary of what you feel the deficiency is and then provide a succinct description of what revisions are needed to bring this *Element* into compliance.

See the example at the bottom of the instructions page for the *Crosswalk* in the Reference Manual.

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Local Plan Review Procedures

DMA 2000 Local Plan Review (continued)

Resources that are available to plan reviewers that can be referred to when providing comments to communities include:

Multi-hazard Mitigation Planning Guidance (and/or the *Interim Criteria* – see "FEMA DMA Mitigation Planning Guidance Fact Sheet in the Reference Manual); and

State and Local Mitigation Planning How-to Guides.

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Local Plan Review Procedures

DMA 2000 Local Plan Review (continued)

The Reference Manual includes a version of the *Crosswalk* with **sample language** for required and recommended revisions that can be used for this purpose (and is available in MSWord format).

The *Crosswalk* also includes a series of **matrices** (starting on page 11) that will help with reviewing plans that cover multiple hazards.

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Local Plan Review Procedures

DMA 2000 Local Plan Review (continued)

For "*shall*" Elements, the revisions are listed as either ***Required*** or ***Recommended Revisions***.

For "*should*" Elements, the revisions are only listed as ***Recommended Revisions***.

In all cases, it is encouraged to provide recommendations and suggestions for how to improve the plan and/or subsequent updates beyond the minimum standards. However, this type of comment needs to be always clearly identified as *Recommended Revisions*.

Local Plan Review Procedures

DMA 2000 Local Plan Review (continued)

For each *Requirement*, determine if any of the *Elements* received an 'N' score. If so, the *Requirement* also receives an 'N' which is indicated in the Summary Score box at the end of each *Requirement* and also on Page 2 of the *Crosswalk*.

For the plan to be approved, all of the *Requirements* must be either *Met* or 'S' (with the exception of the three "*should*" *Requirements* indicated in gray shading under *Risk Assessment)*.

General Information

- The Disaster Mitigation Act of 2000 (DMA 2000) was signed by the President (Public Law 106-390) on October 30, 2000 and was intended to facilitate cooperation between state and local authorities. Section 322 of the Act specifically addresses mitigation planning at the state and local levels; reinforces the importance of pre-disaster mitigation planning; and promotes sustainability as a strategy for disaster resistance.

  Note: In the specific context of this Act and generally accepted emergency management terminology, the phrase "pre-disaster mitigation planning" is defined as the "coordination of actions taken prior to a hazard event to reduce injuries, deaths, property damage, economic losses, and degradation of natural resources during and following natural or manmade hazard events". Recommendations resulting from pre-disaster mitigation planning are typically focused on physical projects that reduce risk from specific hazards but can also include changes in land development regulations such as zoning and building codes as well as public education programs.

- To implement the DMA 2000 requirements, FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002 (at 44 CFR Parts 201 and 206), which established planning and funding criteria for states, tribes, and local governments.

State Hazard Mitigation Planning

- DMA 2000 established a pre-disaster mitigation program and required that a FEMA approved ***standard state hazard mitigation plan*** be in place by November 1, 2004 for a state to continue to be eligible to receive Hazard Mitigation Grant Program (HMGP) funding or Public Assistance (PA) under the recovery categories of the Stafford Act for disasters declared after November 1, 2004.
- DMA 2000 also identifies new requirements that allow HMGP funds to be used for planning activities and increases the amount of HMGP funds available to states that have developed and received FEMA approval of a comprehensive ***enhanced state hazard mitigation plan*** prior to the declaration of a disaster from a maximum of 7½ percent up to a maximum of 20 percent of the total disaster declaration funding.
- State governments have certain responsibilities for implementing Section 322, including:
  - preparing and submitting a "standard plan" (preparing and submitting an "enhanced plan" is an option);
  - reviewing and updating the state mitigation plan every three years;
  - providing technical assistance and training to local governments to assist them in applying for HMGP grants; and
  - supporting the development of local hazard mitigation plans.

Local Hazard Mitigation Planning

- DMA 2000 also required that individual communities have an approved ***local hazard mitigation plan*** in place to be eligible for project grants under HMGP for disasters declared after November 1, 2004 and other grant programs such as the Pre-Disaster Mitigation Program (PDM).
- "Communities" as defined in DMA 2000 local mitigation plan requirements typically include counties, local municipalities and tribal governments, but can also include other local agencies and organizations (school systems, transportation authorities, public utilities, etc.) that can participate as a subapplicant or subgrantee to their respective states.
- A local mitigation plan can apply to a single jurisdiction or multiple jurisdictions within a county, watershed, regional planning district, etc. as long as each jurisdiction participated in the planning process. These plans are referred to as "multi-jurisdictional" pre-disaster mitigation plans.
- Local governments have certain responsibilities for implementing Section 322, including:
  - preparing and submitting a local plan;
  - monitoring projects; and
  - reviewing and updating the mitigation plan every five years.

Terminology

- *Crosswalk* – The *Local Hazard Mitigation Plan Review Crosswalk* developed from the *Rule* and listing all the requirements/elements that *shall/should* be included the plan.
- *Requirements* – Wording quoted directly from the *Rule,* all of which must be successfully addressed for the *Plan* to be approved.
- *Elements* – Questions that break down the *Requirements* into component parts, all of which must be successfully addressed in the plan for the *Requirement* to be approved.
- *Shall* – Rule *Requirements* that must be addressed in the plan. Revisions that are indicated for these items are considered as *Required Revisions*.
- *Must = Shall*
- *Should* – Rule *Requirements* that are encouraged to be addressed in the plan but not required. Revisions that are indicated for these items are considered as *Recommended Revisions*.

DMA 2000 Local Plan Review

1. Page 1 of the *Crosswalk* should be completed to the best of your ability with information provided in the plan or obtained from the community or State (including NFIP Participation information on page 1). Each Region may have their own ways for adding names, titles and dates in the middle of page 1 so check with the responsible party.
2. Starting on Page 3 of the *Crosswalk,* skim through the whole plan (or one of the major divisions of the plan – i.e., Prerequisite(s) / Planning Process / Risk Assessment / Mitigation Strategies / Plan Maintenance Process) to quickly determine if the *Elements* listed in the *Crosswalk* are addressed or included in some way in the document. As you go through this first pass at reading the plan, you should complete the second column ("Location in the Plan") of the *Crosswalk* for each *Element / Requirement* so you can easily find it again.
3. Next, go back and determine if the passage(s) you located in your first pass through the plan fully addresses the questions posed under each *Element*.
4. If the answer is **yes**, score that element with an 'S' for *Satisfactory* (or *Met* for the Prerequisites). To the extent practical, you can add comments regarding how you felt the plan met each individual element receiving a 'S' score (see the example at the bottom of the instructions page for the *Crosswalk* in the *Reference Manual*).
5. If the answer is **no**, score that element with an 'N' for *Needs Improvement* (or *Not Met* for the Prerequisites). For each 'N' score, you must (shall!) provide comment(s). comments need to provide clear guidance to communities regarding the specific improvements they need to make to their plans. We recommend that you first provide a brief summary of what you feel the deficiency is and then provide a succinct description of what revisions are needed to bring this element into compliance. See the example at the bottom of the instructions page for the *Crosswalk* in the *Reference Manual*.
6. For "*shall*" items, the revisions are listed as either *Required or Recommended Revisions*. For "*should*" items, the revisions can only be listed as *Recommended Revisions*.
7. In all cases, it is encouraged to provide recommendations and suggestions for how to improve the plan and/or subsequent updates. However, this type of comment needs to be always clearly identified as *Recommended Revisions*.
8. For each *Requirement*, determine if any of the *Elements* received an 'N' score. If so, the *Requirement* also receives an 'N' which is indicated in the Summary Score box at the end of each *Requirement* and also on Page 2 of the *Crosswalk*.
9. For the plan to be approved, all of the *Requirements* must be either *Met* or 'S' (with the exception of the three "*should*" *Requirements* indicated in gray shading under *Risk Assessment*.

Disaster Mitigation Act of 2000	
	Disaster Mitigation Act of 2000 (Public Law 106-390) *Interim Final Rule* (44 CFR Part 201) *Multi-Hazard Mitigation Planning Guidance* (formerly known as Interim Guidance))
Hazard Identification and Risk Assessment	
	Multi-Hazard Identification and Risk Assessment (http://www.fema.gov/fhm/ft_mhira.shtm)
Natural and ManMade Hazard Mitigation Planning	
	State and Local Mitigation Planning How to Guides: ✓ *Getting Started* (FEMA 386-1) ✓ *Understanding Your Risks* (FEMA 386-2) ✓ *Developing the Mitigation Plan* (FEMA 386-3) ✓ *Bringing the Plan to Life* (FEMA 386-4) ✓ *Integrating ManMade Hazards with Mitigation Planning* (FEMA 386-7) (http://www.fema.gov/fima/planhowto.shtm)

Federal Register

Tuesday,

February 26, 2002

Part III

Federal Emergency Management Agency

44 CFR Parts 201 and 206

Hazard Mitigation Planning and Hazard Mitigation Grant Program; Interim Final Rule

FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Parts 201 and 206

RIN 3067–AD22

Hazard Mitigation Planning and Hazard Mitigation Grant Program

AGENCY: Federal Emergency Management Agency.

ACTION: Interim final rule.

SUMMARY: This rule addresses State mitigation planning, identifies new local mitigation planning requirements, authorizes Hazard Mitigation Grant Program (HMGP) funds for planning activities, and increases the amount of HMGP funds available to States that develop a comprehensive, enhanced mitigation plan. This rule also requires that repairs or construction funded by a disaster loan or grant must be carried out in accordance with applicable standards and says that FEMA may require safe land use and construction practices as a condition of grantees receiving disaster assistance under the Stafford Act.

DATES: *Effective Date:* February 26, 2002.

Comment Date: We will accept written comments through April 29, 2002.

ADDRESSES: Please send written comments to the Rules Docket Clerk, Office of the General Counsel, Federal Emergency Management Agency, 500 C Street, SW., room 840, Washington, DC 20472, (facsimile) 202–646–4536, or (email) *rules@fema.gov.*

FOR FURTHER INFORMATION CONTACT: Margaret E. Lawless, Federal Insurance and Mitigation Administration, Federal Emergency Management Agency, 500 C Street, SW., Washington, DC, 20472, 202–646–3027, (facsimile) 202–646–3104, or (email) *margaret.lawless@fema.gov.*

SUPPLEMENTARY INFORMATION:

Introduction

Throughout the preamble and the rule the terms ''we'', ''our'' and ''us'' refer to FEMA.

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under § 104 the Disaster Mitigation Act of 2000, (DMA 2000) P.L. 106–390, provides new and revitalized approaches to mitigation planning. This section: (1) Continues the requirement for a Standard State Mitigation plan as a condition of disaster assistance; (2) provides for States to receive an increased percentage of HMGP funds (from 15 to 20 percent of the total estimated eligible Federal assistance) if, at the time of the declaration of a major disaster, they have in effect a FEMA-approved Enhanced State Mitigation Plan that meets the factors listed in this rule; (3) establishes a new requirement for local mitigation plans; and (4) authorizes up to 7 percent of the HMGP funds available to a State to be used for development of State, tribal, and local mitigation plans. We will give Indian tribal governments the opportunity to fulfill the requirements of § 322 either as a grantee or a subgrantee. An Indian tribal government may choose to apply for HMGP funding directly to us and would then serve as a grantee, meeting the State level responsibilities, or it may apply through the State, meeting the local government or subgrantee responsibilities.

Section 322, in concert with other sections of the Act, provides a significant opportunity to reduce the Nation's disaster losses through mitigation planning. In addition, implementation of planned, pre-identified, cost-effective mitigation measures will streamline the disaster recovery process. The Act provides a framework for linking pre- and post-disaster mitigation planning and initiatives with public and private interests to ensure an integrated, comprehensive approach to disaster loss reduction. The language in the Act, taken as a whole, emphasizes the importance of strong State and local planning processes and comprehensive program management at the State level. The new planning criteria also support State administration of the HMGP, and contemplate a significant State commitment to mitigation activities, comprehensive State mitigation planning, and strong program management.

The planning process also provides a link between State and local mitigation programs. Both State level and local plans should address strategies for incorporating post-disaster early mitigation implementation strategies and sustainable recovery actions. We also recognize that governments are involved in a range of planning activities and that mitigation plans may be linked to or reference hazardous materials and other non-natural hazard plans. Improved mitigation planning will result in a better understanding of risks and vulnerabilities, as well as to expedite implementation of measures and activities to reduce those risks, both pre- and post-disaster.

Section 409 of the Stafford Act, 42 U.S.C. 5176, which required mitigation plans and the use of minimum codes and standards, was repealed by the DMA 2000. These issues are now addressed in two separate sections of the law: mitigation planning is in section 322 of the Act, and minimum codes and standards are in section 323 of the Act. We previously implemented section 409 through 44 CFR Part 206, Subpart M. Since current law now distinguishes the planning from the codes and standards in separate sections, we will address them in different sections of the CFR. We address the new planning regulations in Part 201 to reflect the broader relevance of planning to all FEMA mitigation programs, while the minimum standards remain in Part 206, Federal Disaster Assistance, Subpart M. The regulations implementing the Hazard Mitigation Grant Program are in Part 206, Subpart N. This rule also contains changes to Subpart N, to reflect the new planning criteria identified in section 322 of the Act.

The administration is considering changes to FEMA's mitigation programs in the President's Budget for FY 2003. However, States and localities still would be required to have plans in effect, which meet the minimum requirements under this rule, as a condition of receiving mitigation assistance after November 1, 2003.

Implementation Strategy. States must have an approved hazard mitigation plan in order to receive Stafford Act assistance, excluding assistance provided pursuant to emergency provisions. These regulations provide criteria for the new two-tiered State mitigation plan process: Standard State Mitigation Plans, which allow a State to receive HMGP funding based on 15 percent of the total estimated eligible Stafford Act disaster assistance, and Enhanced State Mitigation Plans, which allow a State to receive HMGP funds based on 20 percent of the total estimated eligible Stafford Act disaster assistance. Enhanced State Mitigation Plans must demonstrate that the State has developed a comprehensive mitigation program, that it effectively uses available mitigation funding, and that it is capable of managing the increased funding. All State Mitigations Plans must be reviewed, revised, and re-approved by FEMA every three years. An important requirement of the legislation is that we must approve a completed enhanced plan *before* a disaster declaration, in order for the State to be eligible for the increased funding.

We will no longer require States to revise their mitigation plan after every disaster declaration, as under former

section 409 of the Act, 42 U.S.C. 5176. We recommend, however, that States consider revising their plan if a disaster or other circumstances significantly affect its mitigation priorities. States with existing mitigation plans, approved under former section 409, will continue to be eligible for the 15 percent HMGP funding until November 1, 2003, when all State mitigation plans must meet the requirements of these regulations. If State plans are not revised and approved to meet the Standard State Mitigation Plan requirements by that time, they will be ineligible for Stafford Act assistance, excluding emergency assistance.

Indian tribal governments may choose to apply directly to us for HMGP funding, and would therefore be responsible for having an approved State level mitigation plan, and would act as the grantee. If an Indian tribal government chooses to apply for HMGP grants through the State, they would be responsible for having an approved local level mitigation plan, and would serve as a subgrantee accountable to the State as grantee.

This rule also establishes local planning criteria so that these jurisdictions can actively begin the hazard mitigation planning process. This requirement is to encourage the development of comprehensive mitigation plans before disaster events. Section 322 requires local governments to have an approved local mitigation plan to be eligible to receive an HMGP project grant; however, this requirement will not fully take effect until November 1, 2003. FEMA Regional Directors may grant an exception to this requirement in extenuating circumstances. Until November 1, 2003, local governments will be able to receive HMGP project grant funds and may prepare a mitigation plan concurrently with implementation of their project grant. We anticipate that the Predisaster Mitigation program authorized by section 203 of the Act, 42 U.S.C. 5133, will also support this local mitigation planning by making funds available for the development of comprehensive local mitigation plans. Managing States that we approve under new criteria established under section 404 of the Act, 42 U.S.C. 5170c(c), as amended by section 204 of DMA 2000 will have approval authority for local mitigation plans. This provision does not apply to States that we approved under the Managing State program in effect before enactment of DMA 2000.

Our goal is for State and local governments to develop comprehensive and integrated plans that are coordinated through appropriate State, local, and regional agencies, as well as non-governmental interest groups. To the extent feasible and practicable, we would also like to consolidate the planning requirements for different FEMA mitigation programs. This will ensure that one local plan will meet the minimum requirements for all of the different FEMA mitigation programs, such as the Flood Mitigation Assistance Program (authorized by sections 553 and 554 of the National Flood Insurance Reform Act of 1994, 42 U.S.C. 4104c and 42 U.S.C. 4104d), the Community Rating System (authorized by section 541 of the National Flood Insurance Reform Act of 1994, 42 U.S.C. 4022), the Pre-Disaster Mitigation Program (authorized by section 203 of the Stafford Act), the Hazard Mitigation Grant Program (authorized by section 404 of the Stafford Act), and the mitigation activities that are based upon the provisions of section 323 and subsections 406(b) and (e) of the Stafford Act. The mitigation plans may also serve to integrate documents and plans produced under other emergency management programs. State level plans should identify overall goals and priorities, incorporating the more specific local risk assessments, when available, and including projects identified through the local planning process.

Under section 322(d), up to 7 percent of the available HMGP funds may now be used for planning, and we encourage States to use these funds for local plan development. In a memorandum to FEMA Regional Directors dated December 21, 2000, we announced that this provision of section 322 was effective for disasters declared on or after October 30, 2000, the date on which the Disaster Mitigation Act of 2000 became law. Regional Directors are encouraging States to make these funds immediately available to local and Indian tribal governments, although the funds can be used for plan development and review at the State level as well.

As discussed earlier in this Supplementary Information, subsection 323(a) of the Stafford Act, 42 U.S.C. 5166(a), requires as a precondition to receiving disaster assistance under the Act that State and local governments, as well as eligible private nonprofit entities, must agree to carry out repair and reconstruction activities ''in accordance with applicable standards of safety, decency, and sanitation and in conformity with applicable codes, specifications, and standards.'' In addition, that subsection authorizes the President (FEMA, by virtue of Executive Order 12148, as amended) to ''require safe land use and construction practices, after adequate consultation with appropriate State and local officials'' in the course of the use of Federal disaster assistance by eligible applicants to repair and restore disaster-damaged facilities.

At the same time that we implement the planning mandates of section 322 of the Stafford Act, we are also implementing the Minimum Standards for Public and Private Structures provision of section 323 of the Act. This rule appears at Subpart M of Part 206 of Title 44 of the Code of Federal Regulations. As mentioned earlier, the section 322 planning regulations are in Part 201, while Part 206, Subpart M includes only the minimum codes and standards regulations mandated in § 323. The rule to implement § 323 of the Act reinforces the link between pre-disaster planning, building and construction standards, and post-disaster reconstruction efforts.

We encourage comments on this interim final rule, and we will make every effort to involve all interested parties prior to the development of the Final Rule.

Justification for Interim Final Rule

In general, FEMA publishes a rule for public comment before issuing a final rule, under the Administrative Procedure Act, 5 U.S.C. 533 and 44 CFR 1.12. The Administrative Procedure Act, however, provides an exception from that general rule where the agency for good cause finds the procedures for comment and response contrary to public interest. Section 322 of the Stafford Act allows States to receive increased post-disaster grant funding for projects designed to reduce future disaster losses. States will only be eligible for these increased funds if they have a FEMA-approved Enhanced State Mitigation Plan.

This interim final rule provides the criteria for development and approval of these plans, as well as criteria for local mitigation plans required by this legislation. In order for State and local governments to be positioned to receive these mitigation funds as soon as possible, these regulations must be in effect. The public benefit of this rule will be to assist States and communities assess their risks and identify activities to strengthen the larger community and the built environment in order to become less susceptible to disasters. Planning serves as the vital foundation to saving lives and protecting properties, having integrated plans in place can serve to both streamline recovery efforts and lessen potential future damages. Therefore, we believe it is contrary to the public interest to delay

the benefits of this rule. In accordance with the Administrative Procedure Act, 5 U.S.C. 553(d)(3), we find that there is good cause for the interim final rule to take effect immediately upon publication in the **Federal Register** in order to meet the needs of States and communities by identifying criteria for mitigation plans in order to reduce risks nationwide, establish criteria for minimum codes and standards in post-disaster reconstruction, and to allow States to adjust their mitigation plans to receive the increase in mitigation funding.

In addition, we believe that, under the circumstances, delaying the effective date of this rule until after the comment period would not further the public interest. Prior to this rulemaking, FEMA hosted a meeting where interested parties provided comments and suggestions on how we could implement these planning requirements. Participants in this meeting included representatives from the National Emergency Management Association, the Association of State Floodplain Managers, the National Governors' Association, the International Association of Emergency Managers, the National Association of Development Organizations, the American Public Works Association, the National League of Cities, the National Association of Counties, the National Conference of State Legislatures, the International City/County Management Association, and the Bureau of Indian Affairs. We took comments and suggestions provided at this meeting into account in developing this interim final rule. Therefore, we find that prior notice and comment on this rule would not further the public interest. We actively encourage and solicit comments on this interim final rule from interested parties, and we will consider them in preparing the final rule. For these reasons, we believe we have good cause to publish an interim final rule.

National Environmental Policy Act

44 CFR 10.8(d)(2)(ii) excludes this rule from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusion under 44 CFR 10.8(d)(2)(iii), such as the development of plans under this section.

Executive Order 12866, Regulatory Planning and Review

We have prepared and reviewed this rule under the provisions of E.O. 12866, Regulatory Planning and Review. Under Executive Order 12866, 58 FR 51735, October 4, 1993, a significant regulatory action is subject to OMB review and the requirements of the Executive Order. The Executive Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The purpose of this rule is to implement section 322 of the Stafford Act which addresses mitigation planning at the State, tribal, and local levels, identifies new local planning requirements, allows Hazard Mitigation Grant Program (HMGP) funds for planning activities, and increases the amount of HMGP funds available to States that develop a comprehensive, enhanced mitigation plan. The rule identifies local mitigation planning requirements before approval of project grants, and requires our approval of an Enhanced State Mitigation plan as a condition for increased mitigation funding. The rule also implements section 323 of the Stafford Act, which requires that repairs or construction funded by disaster loans or grants must comply with applicable standards and safe land use and construction practices. As such the rule itself will not have an effect on the economy of more than $100,000,000.

Therefore, this rule is a significant regulatory action and is not an economically significant rule under Executive Order 12866. The Office of Management and Budget (OMB) has reviewed this rule under Executive Order 12866.

Executive Order 12898, Environmental Justice

Under Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 16, 1994, we incorporate environmental justice into our policies and programs. The Executive Order requires each Federal agency to conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in our programs, denying persons the benefits of our programs, or subjecting persons to discrimination because of their race, color, or national origin.

No action that we can anticipate under the final rule will have a disproportionately high or adverse human health and environmental effect on any segment of the population. Section 322 focuses specifically on mitigation planning to: Identify the natural hazards, risks, and vulnerabilities of areas in States, localities, and tribal areas; support development of local mitigation plans; provide for technical assistance to local and tribal governments for mitigation planning; and identify and prioritize mitigation actions that the State will support, as resources become available. Section 323 requires compliance with applicable codes and standards in repair and construction, and use of safe land use and construction standards. Accordingly, the requirements of Executive Order 12898 do not apply to this interim final rule.

Paperwork Reduction Act of 1995

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) and concurrent with the publication of this interim final rule, we have submitted a request for review and approval of a new collection of information, which is contained in this interim final rule. Under the Paperwork Reduction Act of 1995, a person may not be penalized for failing to comply with an information collection that does not display a currently valid Office of Management and Budget (OMB) control number. The request was submitted to OMB for approval under the emergency processing procedures in OMB regulation 5 CFR 1320.1. OMB has approved this collection of information for use through August 31, 2002, under OMB Number 3067–0297.

We expect to follow this emergency request with a request for OMB approval to continue the use of the collection of information for a term of three years. The request will be processed under OMB's normal clearance procedures in accordance with provisions of OMB regulation 5 CFR 1320.10. To help us with the timely processing of the emergency and normal clearance submissions to OMB, we invite the general public to comment on the collection of information. This notice and request for comments complies with the provisions of the Paperwork

Reduction Act of 1995 (44 U.S.C. 3506(c)(2)(A)).

Collection of Information

Title: State/Local/Tribal Hazard Mitigation Plans under Section 322 of the Disaster Mitigation Act of 2000.

Abstract: Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistant Act, as amended by Section 104 of the Disaster Mitigation Act of 2000, provides new and revitalized approaches to mitigation planning. To obtain Federal assistance, new planning provisions require that each state, local, and tribal government prepare a hazard mitigation plan to include sections that describe the planning process, an assessment of the risks, a mitigation strategy, and identification of the plan maintenance and updating process. The Act provides a framework for linking pre- and post-disaster mitigation planning and initiatives with public and private interests to ensure an integrated, comprehensive approach to disaster loss reduction. Under Section 322 there is a two-tiered State mitigation plan process. State mitigation plans must be reviewed, revised, and submitted to us every 3 years.

(1) A *Standard State Mitigation Plan* must be approved by us in order for States to be eligible to receive Hazard Mitigation Grant Program (HGMP) funding based on 15 percent of the total estimated eligible Federal disaster assistance. This plan demonstrates the State's goals, priorities, and commitment to reduce risks from natural hazards and serves as a guide for State and local decision makers as they commit resources to reducing the effects of natural hazards.

(2) An *Enhanced State Mitigation Plan* must be approved by us for a State to be eligible to receive HMGP funds based on 20 percent of the total estimated eligible Federal disaster assistance. This plan must be approved by us within the 3 years prior to the current major disaster declaration. It must demonstrate that a State has developed a comprehensive mitigation program, is effectively using available mitigation funding, and is capable of managing the increased funding.

To be eligible to receive HMGP project grants, *local governments* must develop Local Mitigation Plans that include a risk assessment and mitigation strategy to reduce potential losses and target resources. Plans must be reviewed, revised, and submitted to us for approval every 5 years.

To receive HMGP project grants, *tribal governments* may apply as a grantee or subgrantee, and will be required to meet the planning requirements of a State or local government.

Estimated Total Annual Burden:

Type of collection/forms	No. of respondents	Hours per response	Annual burden hours
Update state or tribal mitigation plans (standard state mitigation plans)	18	320	5,760
State review of local plans	500 local plans	8	4,000
States develop Enhanced State Mitigation Plans	7	100	700
Local or tribal governments develop mitigation plans	500 local plans	300	150,000
Total burden			160,460

Comments: We are soliciting written comments to: (a) Evaluate whether the proposed data collection is necessary for the proper performance of the agency, including whether the information shall have practical utility; (b) evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) obtain recommendations to enhance the quality, utility, and clarity of the information to be collected; and (d) evaluate the extent to which automated, electronic, mechanical, or other technological collection techniques may further reduce the respondents' burden. FEMA will accept comments through April 29, 2002.

Addressee: Interested persons should submit written comments to Muriel B. Anderson, Chief, Records Management Section, Program Services and Systems Branch, Facilities Management and Services Division, Administration and Resource Planning Directorate, Federal Emergency Management Agency, 500 C Street, Street, SW., Washington, DC 20472.

FOR FURTHER INFORMATION CONTACT: You may obtain copies of the OMB paperwork clearance package by contacting Ms. Anderson at (202) 646–2625 (voice), (202) 646–3347 (facsimile), or by e-mail at *muriel.anderson@fema.gov.*

Executive Order 13132, Federalism

Executive Order 13132, Federalism, dated August 4, 1999, sets forth principles and criteria that agencies must adhere to in formulating and implementing policies that have federalism implications, that is, regulations that have substantial direct effects on the States, or on the distribution of power and responsibilities among the various levels of government. Federal agencies must closely examine the statutory authority supporting any action that would limit the policymaking discretion of the States, and to the extent practicable, must consult with State and local officials before implementing any such action.

We have reviewed this rule under E.O.13132 and have concluded that the rule does not have federalism implications as defined by the Executive Order. We have determined that the rule does not significantly affect the rights, roles, and responsibilities of States, and involves no preemption of State law nor does it limit State policymaking discretion.

However, we have consulted with State and local officials. In order to assist us in the development of this rule, we hosted a meeting to allow interested parties an opportunity to provide their perspectives on the legislation and options for implementation of § 322. Stakeholders who attended the meeting included representatives from the National Emergency Management Association, the Association of State Floodplain Managers, the National Governors' Association, the International Association of Emergency Managers, the National Association of Development Organizations, the American Public Works Association, the National League of Cities, the National Association of Counties, the National Conference of State Legislatures, the International City/County Management Association, and the Bureau of Indian Affairs. We received valuable input from all parties at the meeting, which we took into account in the development of this rule. Additionally, we actively encourage and solicit comments on this interim final rule from interested parties, and we will

consider them in preparing the final rule.

Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

We have reviewed this interim final rule under Executive Order 13175, which became effective on February 6, 2001. Under the Hazard Mitigation Grant Program (HMGP), Indian tribal governments will have the option to apply for grants directly to us and to serve as ''grantee'', carrying out ''State'' roles. If they choose this option, tribal governments may submit either a State-level Standard Mitigation Plan for the 15 percent HMGP funding or a State-level Enhanced Mitigation Plan for 20 percent HMGP funding. In either case, Indian tribal governments would be able to spend up to 7 percent of those funds on planning. Before developing this rule, we met with representatives from State and local governments and the Bureau of Indian Affairs, to discuss the new planning opportunities and requirements of § 322 of the Stafford Act. We received valuable input from all parties, which helped us to develop this interim final rule.

In reviewing the interim final rule, we find that it does not have ''tribal implications'' as defined in Executive Order 13175 because it will not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes. Moreover, the interim final rule does not impose substantial direct compliance costs on tribal governments, nor does it preempt tribal law, impair treaty rights or limit the self-governing powers of tribal governments.

Congressional Review of Agency Rulemaking

We have sent this interim final rule to the Congress and to the General Accounting Office under the Congressional Review of Agency Rulemaking Act, Public Law 104–121. The rule is a not ''major rule'' within the meaning of that Act. It is an administrative action in support of normal day-to-day mitigation planning activities required by section 322 and compliance under section 323 of the Stafford Act, as enacted in DMA 2000.

The rule will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have ''significant adverse effects'' on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises. This final rule is subject to the information collection requirements of the Paperwork Reduction Act, and OMB has assigned Control No. 3067–0297. The rule is not an unfunded Federal mandate within the meaning of the Unfunded Mandates Reform Act of 1995, Public Law 104–4, and any enforceable duties that we impose are a condition of Federal assistance or a duty arising from participation in a voluntary Federal program.

List of Subjects in 44 CFR Part 201 and Part 206

Administrative practice and procedure, Disaster assistance, Grant programs, Mitigation planning, Reporting and recordkeeping requirements.

Accordingly, Amend 44 CFR, Subchapter D—Disaster Assistance, as follows:

1. Add Part 201 to read as follows:

PART 201—MITIGATION PLANNING

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121–5206; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; and E.O. 12673, 54 FR 12571, 3 CFR, 1989 Comp., p. 214.

§ 201.1 Purpose.

(a) The purpose of this part is to provide information on the polices and procedures for mitigation planning as required by the provisions of section 322 of the Stafford Act, 42 U.S.C. 5165.

(b) 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.

§ 201.2 Definitions.

Grantee means the government to which a grant is awarded, which is accountable for the use of the funds provided. The grantee is the entire legal entity even if only a particular component of the entity is designated in the grant award document. Generally, the State is the grantee. However, after a declaration, an Indian tribal government may choose to be a grantee, or may act as a subgrantee under the State. An Indian tribal government acting as grantee will assume the responsibilities of a ''state'', as described in this part, for the purposes of administering the grant.

Hazard mitigation means any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

Hazard Mitigation Grant Program means the program authorized under section 404 of the Stafford Act, 42 U.S.C 5170c and implemented at 44 CFR Part 206, Subpart N, which authorizes funding for certain mitigation measures identified through the evaluation of natural hazards conducted under section 322 of the Stafford Act 42 U.S.C 5165.

Indian tribal government means any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

Local government is any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

Managing State means a State to which FEMA has delegated the authority to administer and manage the HMGP under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c). FEMA may also delegate authority to tribal governments to administer and manage the HMGP as a Managing State.

Regional Director is a director of a regional office of FEMA, or his/her designated representative.

Small and impoverished communities means a community of 3,000 or fewer individuals that is identified by the State as a rural community, and is not a remote area within the corporate boundaries of a larger city; is economically disadvantaged, by having an average per capita annual income of residents not exceeding 80 percent of national, per capita income, based on

best available data; the local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment rate; and any other factors identified in the State Plan in which the community is located.

The Stafford Act refers to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93–288, as amended (42 U.S.C. 5121–5206).

State is any State of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

State Hazard Mitigation Officer is the official representative of State government who is the primary point of contact with FEMA, other Federal agencies, and local governments in mitigation planning and implementation of mitigation programs and activities required under the Stafford Act.

Subgrantee means the government or other legal entity to which a subgrant is awarded and which is accountable to the grantee for the use of the funds provided. Subgrantees can be a State agency, local government, private non-profit organizations, or Indian tribal government. Indian tribal governments acting as a subgrantee are accountable to the State grantee.

§ 201.3 Responsibilities.

(a) *General.* This section identifies the key responsibilities of FEMA, States, and local/tribal governments in carrying out section 322 of the Stafford Act, 42 U.S.C. 5165.

(b) *FEMA.* The key responsibilities of the Regional Director are to:

(1) Oversee all FEMA related pre- and post-disaster hazard mitigation programs and activities;

(2) Provide technical assistance and training to State, local, and Indian tribal governments regarding the mitigation planning process;

(3) Review and approve all Standard and Enhanced State Mitigation Plans;

(4) Review and approve all local mitigation plans, unless that authority has been delegated to the State in accordance with § 201.6(d);

(5) Conduct reviews, at least once every three years, of State mitigation activities, plans, and programs to ensure that mitigation commitments are fulfilled, and when necessary, take action, including recovery of funds or denial of future funds, if mitigation commitments are not fulfilled.

(c) *State.* The key responsibilities of the State are to coordinate all State and local activities relating to hazard evaluation and mitigation and to:

(1) Prepare and submit to FEMA a Standard State Mitigation Plan following the criteria established in § 201.4 as a condition of receiving Stafford Act assistance (except emergency assistance).

(2) In order to be considered for the 20 percent HMGP funding, prepare and submit an Enhanced State Mitigation Plan in accordance with § 201.5, which must be reviewed and updated, if necessary, every three years from the date of the approval of the previous plan.

(3) At a minimum, review and, if necessary, update the Standard State Mitigation Plan by November 1, 2003 and every three years from the date of the approval of the previous plan in order to continue program eligibility.

(4) Make available the use of up to the 7 percent of HMGP funding for planning in accordance with § 206.434.

(5) Provide technical assistance and training to local governments to assist them in applying for HMGP planning grants, and in developing local mitigation plans.

(6) For Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c), review and approve local mitigation plans in accordance with § 201.6(d).

(d) *Local governments.* The key responsibilities of local governments are to:

(1) Prepare and adopt a jurisdiction-wide natural hazard mitigation plan as a condition of receiving project grant funds under the HMGP, in accordance with § 201.6.

(2) At a minimum, review and, if necessary, update the local mitigation plan every five years from date of plan approval to continue program eligibility.

(e) *Indian tribal governments.* Indian tribal governments will be given the option of applying directly to us for Hazard Mitigation Grant Program funding, or they may choose to apply through the State. If they apply directly to us, they will assume the responsibilities of the State, or grantee, and if they apply through the State, they will assume the responsibilities of the local government, or subgrantee.

§ 201.4 Standard State Mitigation Plans.

(a) *Plan requirement.* By November 1, 2003, States must have an approved Standard State Mitigation plan meeting the requirements of this section, in order to receive assistance under the Stafford Act, although assistance authorized under disasters declared prior to November 1, 2003 will continue to be made available. In any case, emergency assistance provided under 42 U.S.C. 5170a, 5170b, 5173, 5174, 5177, 5179, 5180, 5182, 5183, 5184, 5192 will not be affected. The mitigation plan is the demonstration of the State's commitment to reduce risks from natural hazards and serves as a guide for State decision makers as they commit resources to reducing the effects of natural hazards. States may choose to include the requirements of the HMGP Administrative Plan in their mitigation plan.

(b) *Planning process.* An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.

(c) *Plan content.* To be effective the plan must include the following elements:

(1) Description of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.

(2) *Risk assessments* that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments. The risk assessment shall include the following:

(i) An overview of the type and location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate;

(ii) An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned critical or operated facilities located in the

identified hazard areas shall also be addressed;

(iii) An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.

(3) A *Mitigation Strategy* that provides the State's blueprint for reducing the losses identified in the risk assessment. This section shall include:

(i) A description of State goals to guide the selection of activities to mitigate and reduce potential losses.

(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

(iii) An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.

(iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.

(4) A section on the *Coordination of Local Mitigation Planning* that includes the following:

(i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.

(ii) A description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.

(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.

(5) A *Plan Maintenance Process* that includes:

(i) An established method and schedule for monitoring, evaluating, and updating the plan.

(ii) A system for monitoring implementation of mitigation measures and project closeouts.

(iii) A system for reviewing progress on achieving goals as well as activities and projects identified in the Mitigation Strategy.

(6) A *Plan Adoption Process.* The plan must be formally adopted by the State prior to submittal to us for final review and approval.

(7) *Assurances.* The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).

(d) *Review and updates.* Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate Regional Director every three years. The Regional review will be completed within 45 days after receipt from the State, whenever possible. We also encourage a State to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required.

§ 201.5 Enhanced State Mitigation Plans.

(a) A State with a FEMA approved Enhanced State Mitigation Plan at the time of a disaster declaration is eligible to receive increased funds under the HMGP, based on twenty percent of the total estimated eligible Stafford Act disaster assistance. The Enhanced State Mitigation Plan must demonstrate that a State has developed a comprehensive mitigation program, that the State effectively uses available mitigation funding, and that it is capable of managing the increased funding. In order for the State to be eligible for the 20 percent HMGP funding, FEMA must have approved the plan within three years prior to the disaster declaration.

(b) Enhanced State Mitigation Plans must include all elements of the Standard State Mitigation Plan identified in § 201.4, as well as document the following:

(1) Demonstration that the plan is integrated to the extent practicable with other State and/or regional planning initiatives (comprehensive, growth management, economic development, capital improvement, land development, and/or emergency management plans) and FEMA mitigation programs and initiatives that provide guidance to State and regional agencies.

(2) Documentation of the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:

(i) Established eligibility criteria for multi-hazard mitigation measures.

(ii) A system to determine the cost effectiveness of mitigation measures, consistent with OMB Circular A–94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, and to rank the measures according to the State's eligibility criteria.

(iii) Demonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following:

(A) Meeting HMGP and other mitigation grant application timeframes and submitting complete, technically feasible, and eligible project applications with appropriate supporting documentation;

(B) Preparing and submitting accurate environmental reviews and benefit-cost analyses;

(C) Submitting complete and accurate quarterly progress and financial reports on time; and

(D) Completing HMGP and other mitigation grant projects within established performance periods, including financial reconciliation.

(iv) A system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (actual cost avoidance) of each mitigation action.

(3) Demonstration that the State effectively uses existing mitigation programs to achieve its mitigation goals.

(4) Demonstration that the State is committed to a comprehensive state mitigation program, which might include any of the following:

(i) A commitment to support local mitigation planning by providing workshops and training, State planning grants, or coordinated capability development of local officials, including Emergency Management and Floodplain Management certifications.

(ii) A statewide program of hazard mitigation through the development of legislative initiatives, mitigation councils, formation of public/private

partnerships, and/or other executive actions that promote hazard mitigation.

(iii) The State provides a portion of the non-Federal match for HMGP and/or other mitigation projects.

(iv) To the extent allowed by State law, the State requires or encourages local governments to use a current version of a nationally applicable model building code or standard that addresses natural hazards as a basis for design and construction of State sponsored mitigation projects.

(v) A comprehensive, multi-year plan to mitigate the risks posed to existing buildings that have been identified as necessary for post-disaster response and recovery operations.

(vi) A comprehensive description of how the State integrates mitigation into its post-disaster recovery operations.

(c) *Review and updates.* (1) A State must review and revise its plan to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities, and resubmit it for approval to the appropriate Regional Director every three years. The Regional review will be completed within 45 days after receipt from the State, whenever possible.

(2) In order for a State to be eligible for the 20 percent HMGP funding, the Enhanced State Mitigation plan must be approved by FEMA within the three years prior to the current major disaster declaration.

§ 201.6 Local Mitigation Plans.

The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

(a) *Plan requirement.* (1) For disasters declared after November 1, 2003, a local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. Until November 1, 2003, local mitigation plans may be developed concurrent with the implementation of the project grant.

(2) Regional Directors may grant an exception to the plan requirement in extraordinary circumstances, such as in a small and impoverished community, when justification is provided. In these cases, a plan will be completed within 12 months of the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of grant's termination will not be reimbursed by FEMA.

(3) Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan. State-wide plans will not be accepted as multi-jurisdictional plans.

(b) *Planning process.* An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

(c) *Plan content.* The plan shall include the following:

(1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

(2) A *risk assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:

(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:

(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;

(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

(3) *A mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:

(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

(iii) An action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

(4) A *plan maintenance process* that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

(iii) Discussion on how the community will continue public participation in the plan maintenance process.

(5) *Documentation* that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

(d) *Plan review.* (1) Plans must be submitted to the State Hazard Mitigation Officer for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval.

(2) The Regional review will be completed within 45 days after receipt from the State, whenever possible.

(3) Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP project grant funding.

(4) Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c) will be delegated approval authority for local mitigation plans, and the review will be based on the criteria in this part. Managing States will review the plans within 45 days of receipt of the plans, whenever possible, and provide a copy of the approved plans to the Regional Office.

PART 206—FEDERAL DISASTER ASSISTANCE FOR DISASTERS DECLARED ON OR AFTER NOVEMBER 23, 1988

2. The authority citation for part 206 is revised to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121–5206; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; and E.O. 12673, 54 FR 12571, 3 CFR, 1989 Comp., p. 214.

2a. Revise Part 206, Subpart M to read as follows:

Subpart M—Minimum Standards

Sec.
206.400 General.
206.401 Local standards.
206.402 Compliance.

§ 206.400 General.

(a) As a condition of the receipt of any disaster assistance under the Stafford Act, the applicant shall carry out any repair or construction to be financed with the disaster assistance in accordance with applicable standards of safety, decency, and sanitation and in conformity with applicable codes, specifications and standards.

(b) Applicable codes, specifications, and standards shall include any disaster resistant building code that meets the minimum requirements of the National Flood Insurance Program (NFIP) as well as being substantially equivalent to the recommended provisions of the National Earthquake Hazards Reduction Program (NEHRP). In addition, the applicant shall comply with any requirements necessary in regards to Executive Order 11988, Floodplain Management, Executive Order 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction, and any other applicable Executive orders.

(c) In situations where there are no locally applicable standards of safety, decency and sanitation, or where there are no applicable local codes, specifications and standards governing repair or construction activities, or where the Regional Director determines that otherwise applicable codes, specifications, and standards are inadequate, then the Regional Director may, after consultation with appropriate State and local officials, require the use of nationally applicable codes, specifications, and standards, as well as safe land use and construction practices in the course of repair or construction activities.

(d) The mitigation planning process that is mandated by section 322 of the Stafford Act and 44 CFR part 201 can assist State and local governments in determining where codes, specifications, and standards are inadequate, and may need to be upgraded.

§ 206.401 Local standards.

The cost of repairing or constructing a facility in conformity with minimum codes, specifications and standards may be eligible for reimbursement under section 406 of the Stafford Act, as long as such codes, specifications and standards meet the criteria that are listed at 44 CFR 206.226(b).

§ 206.402 Compliance.

A recipient of disaster assistance under the Stafford Act must document for the Regional Director its compliance with this subpart following the completion of any repair or construction activities.

Subpart N—Hazard Mitigation Grant Program

3. Revise § 206.431 to read as follows:

§ 206.431 Definitions.

Activity means any mitigation measure, project, or action proposed to reduce risk of future damage, hardship, loss or suffering from disasters.

Applicant means a State agency, local government, Indian tribal government, or eligible private nonprofit organization, submitting an application to the grantee for assistance under the HMGP.

Enhanced State Mitigation Plan is the hazard mitigation plan approved under 44 CFR part 201 as a condition of receiving increased funding under the HMGP.

Grant application means the request to FEMA for HMGP funding, as outlined in § 206.436, by a State or tribal government that will act as grantee.

Grant award means total of Federal and non-Federal contributions to complete the approved scope of work.

Grantee means the government to which a grant is awarded and which is accountable for the use of the funds provided. The grantee is the entire legal entity even if only a particular component of the entity is designated in the grant award document. Generally, the State is the grantee. However, an Indian tribal government may choose to be a grantee, or it may act as a subgrantee under the State. An Indian tribal government acting as a grantee will assume the responsibilities of a ''state'', under this subpart, for the purposes of administering the grant.

Indian tribal government means any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

Local Mitigation Plan is the hazard mitigation plan required of a local or Indian tribal government acting as a subgrantee as a condition of receiving a project subgrant under the HMGP as outlined in 44 CFR 201.6.

Standard State Mitigation Plan is the hazard mitigation plan approved under 44 CFR part 201, as a condition of receiving Stafford Act assistance as outlined in § 201.4.

State Administrative Plan for the Hazard Mitigation Grant Program means the plan developed by the State to describe the procedures for administration of the HMGP.

Subgrant means an award of financial assistance under a grant by a grantee to an eligible subgrantee.

Subgrant application means the request to the grantee for HMGP funding by the eligible subgrantee, as outlined in § 206.436.

Subgrantee means the government or other legal entity to which a subgrant is awarded and which is accountable to the grantee for the use of the funds provided. Subgrantees can be a State agency, local government, private non-profit organizations, or Indian tribal government as outlined in § 206.433.

Indian tribal governments acting as a subgrantee are accountable to the State grantee.

4. Revise § 206.432(b) to read as follows:

§ 206.432 Federal grant assistance.

* * * * *

(b) *Amounts of assistance.* The total of Federal assistance under this subpart shall not exceed either 15 or 20 percent of the total estimated Federal assistance (excluding administrative costs) provided for a major disaster under 42 U.S.C. 5170b, 5172, 5173, 5174, 5177, 5178, 5183, and 5201 as follows:

(1) *Fifteen (15) percent.* Effective November 1, 2003, a State with an approved Standard State Mitigation Plan, which meets the requirements outlined in 44 CFR 201.4, shall be eligible for assistance under the HMGP not to exceed 15 percent of the total estimated Federal assistance described in this paragraph. Until that date, existing, approved State Mitigation Plans will be accepted.

(2) *Twenty (20) percent.* A State with an approved Enhanced State Mitigation Plan, in effect prior to the disaster declaration, which meets the requirements outlined in 44 CFR 201.5 shall be eligible for assistance under the HMGP not to exceed 20 percent of the total estimated Federal assistance described in this paragraph.

(3) The estimates of Federal assistance under this paragraph (b) shall be based on the Regional Director's estimate of all eligible costs, actual grants, and appropriate mission assignments.

* * * * *

5. Section 206.434 is amended by redesignating paragraphs (b) through (g) as paragraphs (c) through (h), respectively; adding a new paragraph (b); revising redesignated paragraphs (c) introductory text and (c)(1); and revising redesignated paragraph (d) to read as follows:

§ 206.434 Eligibility.

* * * * *

(b) *Plan requirement.* (1) For all disasters declared on or after November 1, 2003, local and tribal government applicants for subgrants, must have an approved local mitigation plan in accordance with 44 CFR 201.6 prior to receipt of HMGP subgrant funding. Until November 1, 2003, local mitigation plans may be developed concurrent with the implementation of subgrants.

(2) Regional Directors may grant an exception to this requirement in extraordinary circumstances, such as in a small and impoverished community when justification is provided. In these cases, a plan will be completed within 12 months of the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of grant's termination will not be reimbursed by FEMA.

(c) *Minimum project criteria.* To be eligible for the Hazard Mitigation Grant Program, a project must:

(1) Be in conformance with the State Mitigation Plan and Local Mitigation Plan approved under 44 CFR part 201;

* * * * *

(d) *Eligible activities.* (1) *Planning.* Up to 7% of the State's HMGP grant may be used to develop State, tribal and/or local mitigation plans to meet the planning criteria outlined in 44 CFR part 201.

(2) *Types of projects.* Projects may be of any nature that will result in protection to public or private property. Eligible projects include, but are not limited to:

(i) Structural hazard control or protection projects;

(ii) Construction activities that will result in protection from hazards;

(iii) Retrofitting of facilities;

(iv) Property acquisition or relocation, as defined in paragraph (e) of this section;

(v) Development of State or local mitigation standards;

(vi) Development of comprehensive mitigation programs with implementation as an essential component;

(vii) Development or improvement of warning systems.

* * * * *

6. Revise § 206.435(a) to read as follows:

§ 206.435 Project identificaiton and selection criteria.

(a) *Identification.* It is the State's responsibility to identify and select eligible hazard mitigation projects. All funded projects must be consistent with the State Mitigation Plan. Hazard Mitigation projects shall be identified and prioritized through the State, Indian tribal, and local planning process.

* * * * *

7. Revise § 206.436 to read as follows:

§ 206.436 Application procedures.

(a) *General.* This section describes the procedures to be used by the grantee in submitting an application for HMGP funding. Under the HMGP, the State or Indian tribal government is the grantee and is responsible for processing subgrants to applicants in accordance with 44 CFR part 13 and this part 206. Subgrantees are accountable to the grantee.

(b) *Governor's Authorized Representative.* The Governor's Authorized Representative serves as the grant administrator for all funds provided under the Hazard Mitigation Grant Program. The Governor's Authorized Representative's responsibilities as they pertain to procedures outlined in this section include providing technical advice and assistance to eligible subgrantees, and ensuring that all potential applicants are aware of assistance available and submission of those documents necessary for grant award.

(c) *Hazard mitigation application.* Upon identification of mitigation measures, the State (Governor's Authorized Representative) will submit its Hazard Mitigation Grant Program application to the FEMA Regional Director. The application will identify one or more mitigation measures for which funding is requested. The application must include a Standard Form (SF) 424, Application for Federal Assistance, SF 424D, Assurances for Construction Programs, if appropriate, and an narrative statement. The narrative statement will contain any pertinent project management information not included in the State's administrative plan for Hazard Mitigation. The narrative statement will also serve to identify the specific mitigation measures for which funding is requested. Information required for each mitigation measure shall include the following:

(1) Name of the subgrantee, if any;

(2) State or local contact for the measure;

(3) Location of the project;

(4) Description of the measure;

(5) Cost estimate for the measure;

(6) Analysis of the measure's cost-effectiveness and substantial risk reduction, consistent with § 206.434(c);

(7) Work schedule;

(8) Justification for selection;

(9) Alternatives considered;

(10) Environmental information consistent with 44 CFR part 9, Floodplain Management and Protection of Wetlands, and 44 CFR part 10, Environmental Considerations.

(d) *Application submission time limit.* The State's application may be amended as the State identifies and selects local project applications to be funded. The State must submit all local HMGP applications and funding requests for the purpose of identifying new projects to the Regional Director within 12 months of the date of disaster declaration.

(e) *Extensions.* The State may request the Regional Director to extend the application time limit by 30 to 90 day

increments, not to exceed a total of 180 days. The grantee must include a justification in its request.

(f) *FEMA approval.* The application and supplement(s) will be submitted to the FEMA Regional Director for approval. FEMA has final approval authority for funding of all projects.

(g) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

Subpart H—Public Assistance Eligibility

* * * * *

8. Revise § 206.220 to read as follows:

§ 206.220 General.

This subpart provides policies and procedures for determinations of eligibility of applicants for public assistance, eligibility of work, and eligibility of costs for assistance under sections 402, 403, 406, 407, 418, 419, 421(d), 502, and 503 of the Stafford Act. Assistance under this subpart must also conform to requirements of 44 CFR part 201, Mitigation Planning, and 44 CFR part 206, subparts G—Public Assistance Project Administration, I—Public Assistance Insurance Requirements, J—Coastal Barrier Resources Act, and M—Minimum Standards. Regulations under 44 CFR part 9—Floodplain Management and 44 CFR part 10—Environmental Considerations, also apply to this assistance.

9. Section 206.226 is amended by redesignating paragraphs

(b) through (j) as paragraphs (c) through (k), respectively; adding a new paragraph (b); and revising redesignated paragraph (g)(5) to read as follows:

§ 206.226 Restoration of damaged facilities.

* * * * *

(b) *Mitigation planning.* In order to receive assistance under this section, as of November 1, 2003, the State must have in place a FEMA approved State Mitigation Plan in accordance with 44 CFR part 201.

* * * * *

(g) * * *

(5) If relocation of a facility is not feasible or cost effective, the Regional Director shall disapprove Federal funding for the original location when he/she determines in accordance with 44 CFR parts 9, 10, 201, or subpart M of this part 206, that restoration in the original location is not allowed. In such cases, an alternative project may be applied for.

* * * * *

Dated: February 19, 2002.

Michael D. Brown,

General Counsel.

[FR Doc. 02–4321 Filed 2–25–02; 8:45 am]

BILLING CODE 6718–05–P

To improve the guidance available to States, local jurisdictions, and Tribal governments on the "bottom line" with respect to FEMA approval of the multi-hazard mitigation plans required under the Disaster Mitigation Act of 2000 (DMA 2000), as the November 1, 2004 deadline approaches, FEMA has revised the July 2002 guidance document, *Interim Criteria for Mitigation planning under DMA 2000*. We want to stress, however, that the **Interim Final Rule requirements for State and local mitigation plans remain unchanged**.

The updated *Multi-Hazard Mitigation Planning Guidance*, dated March 2004, incorporates feedback and addresses issues that State and local officials and FEMA staff discussed at the Mitigation Planning Workshops FEMA regional offices held during the spring of 2002 and 2003.

The updated *Planning Guidance* **does**:

- ✓ Clarify the distinction between the "shoulds" (recommended to be in the plans) and "shalls" (required to be in the plans), and corrects the few discrepancies that were found in the July 2002 guidance relative to the Interim Final Rule,
- ✓ Improve explanations of the plan requirements,
- ✓ Improve the sample plan text to illustrate distinctions between plan approaches that would and would not meet DMA 2000 requirements,
- ✓ Revise some of the "reviewer's comments" on the sample plan text to track more closely with the rule requirements, and
- ✓ Reformat the Plan Review Crosswalks (Standard State, Enhanced State, and Local) by breaking the requirements into elements where appropriate, to help plan writers and reviewers ensure that plans include the necessary information.

The updated *Planning Guidance* **does not**:

- ✘ Change the requirements of the Interim Final Rule
- ✘ Establish new or additional planning requirements, or
- ✘ Necessitate a change in approach for planning currently underway, or for plans already approved.

The Multi-Hazard Mitigation Planning Guidance is being posted at www.fema.gov/fima/planning. For more information, please contact your FEMA regional office.

Comprehensive List of Frequently Asked Questions (FAQ's)

March 18, 2003

Question 1: Are HMGP planning grants subject to a benefit-cost analysis in order to be eligible for funding?

Answer: The Disaster Mitigation Act of 2000 authorizes up to 7% of the HMGP ceiling to be used for the development of State, Indian Tribal, and/or local mitigation plans that meet the planning criteria outlined in 44 CFR Part 201. A benefit-cost analysis is not required for the use of the 7% planning funds.

Question 2: Are annual EMPG funds contingent upon a State meeting the Section 322 planning requirements?

Answer: No, EMPG funding will not be withheld from a State that does not update its mitigation plan in compliance with 44 CFR Part 201. However, FEMA does emphasize the need to encourage planning assistance and training with the EMPG funds. A State may choose to use the funding they receive under the EMPG to develop specific pieces of their plan as they relate to all hazards.

Question 3: What should be the role of private nonprofit organizations in the development, review, and approval of local mitigation plans?

Answer: Private nonprofit organizations, especially those that may be eligible applicants for mitigation projects, should participate in the development of the local mitigation plan. If they have fully participated in the development and review of the local plan, it is not necessary for them to approve/adopt the plan, as long as it is adopted by the local jurisdiction. Note: the issues related to private nonprofits that cover a wide geographic area, such as rural electric cooperatives or levee districts, will be addressed in a separate FAQ.

Question 4: Are separate plans required from State agencies when they are subgrantees to the State agency serving as the grantee to FEMA?

Answer: Not usually. State agency issues should be addressed in the State Mitigation Plan, and potential projects or funded activities should be included in the plan. The State has two options for addressing other State agency mitigation issues in a plan. The preferred option is to ensure participation in the State mitigation planning process by requiring each participating agency to sign-off on the State Mitigation Plan as a condition of mitigation project grant funding. State agencies should identify issues of particular interest to them, summarizing any specific projects, activities, or mitigation commitments in a brief document that can be an addendum to the State Mitigation Plan. The second option is: if agencies do not participate in the Statewide planning process, then they must prepare a separate plan in order to be eligible for mitigation project grant funding.

Question 5: What is the policy to prevent a conflict of interest when a contractor has the potential to be involved in the preparation of a mitigation plan and that same company is used to assist FEMA in plan reviews?

Answer: If the contractor has been involved at all in the preparation of a plan, or any portion of the plan, they will not be able to participate in the plan review. This does not apply to general data collection that may be generated as part of post-disaster recovery activities.

Question 6: The planning criteria outlined in 44 CFR Part 201 discuss the development of countywide or multi-jurisdictional plans (which must be adopted by all jurisdictions included), since many issues are better resolved by evaluating hazards in a more comprehensive fashion. If a jurisdiction within the boundaries of a multi-jurisdictional planning area does not participate in the planning process and/or does not formally adopt the plan, what are the implications to the other participating jurisdictions within that multi-jurisdictional plan?

Answer: When a multi-jurisdictional plan is prepared, any participating entity/jurisdiction must adopt the plan if they wish to be eligible for future project grant funding from FEMA. If they do not want to sign off on the plan, that will not prevent any of the other jurisdictions from approving the plan and being eligible for project grants. For instance, if there was a countywide plan, and town A did not adopt the plan, but the county and other towns/cities did adopt it, the only one adversely affected would be town A. We expect, however, that the multi-jurisdictional plan would address any issues that crossed over jurisdictional lines to as great a degree as possible.

Benefit-Cost Analysis for Projects

Question 7: What level of detail should be provided in mitigation plans with respect to benefit-cost calculations for projects?

Answer: According to DMA interim final regulations [44 CFR §201.6(c)(3)(iii)] local mitigation plans must contain a strategy (or action plan) whereby "Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a benefit-cost review of the proposed projects and their associated costs."

This is not intended to require a full-blown benefit-cost calculation for inclusion within the plan document. However, one key aspect of the many considerations in deciding what type of mitigation action(s) to pursue is an economic assessment of the particular action. This (and the other considerations) should be debated and discussed as part of the planning team's and/or larger community's decision-making process. A possible result of these local discussions *could* be the decision to complete a formal benefit-cost evaluation of the various mitigation approaches that are technically appropriate for the situation. However, this is not required to be included in the plan. As long as the economic considerations are summarized in the plan document as part of the community's analysis of the "comprehensive range of specific mitigation actions of projects being considered…" [44 CFR §201.6(c)(3)(ii)], that would be sufficient.

Once funding is being sought for the particular mitigation action, the detailed benefit-cost calculation would be required, as described under the various grant program regulations.

Demonstration of Effective Program Management

Question 8: What is the length of time necessary for a State to demonstrate a track record of effective program management? (Enhanced Plan requirement)

Answer: A State must show one year (4 quarters) of demonstrated effective program management. This demonstration will be between the FEMA Regional Office and the State to determine. Examples of effective program management include, but are not limited to: meeting grant application time frames with complete, technically feasible, and eligible project applications; preparing and submitting accurate environmental reviews and benefit-cost analyses and timely submission of quarterly financial and progress reports; demonstrated work-in-progress throughout the period of performance; and completed closeout of grants within 90 days of end of performance periods.

Level of Detail for Risk Assessments

Question 9: What level of detail is necessary for a Risk Assessment?

Answer: The short answer to this question is: "It depends."

As stated in 44 CFR §201.6(c)(2), the risk assessment should provide enough information to enable the jurisdiction to identify and prioritize appropriate mitigation actions. The risk assessment must include a description of the vulnerability that includes the potential impact of each hazard on the community. This type of information can be portrayed in many ways, but must be based on **best available data**. The following provides examples of the variety of ways vulnerability can be depicted; each of the examples below could meet DMA criteria if it is determined that the approaches and data used represent the community's best-faith efforts to obtain the most recent, accurate data available.

Communities A, B, and C each contain 5,000 households and 100 businesses (based on Census data and the local community plan). The communities each have a 100-year floodplain running through them, but there is no detailed information as to how many buildings lie in the floodplain, nor is there detailed information on what the depth of the 100-year flood would be at the buildings. The communities can demonstrate their vulnerability in the following ways:

Scenario 1: Community A's planning team obtains the tax maps (containing parcel-level information) for the community and transfers the FIRM boundaries onto it. It then counts the number of homes and businesses within the floodway and floodplain boundaries. The planning team determines that there are 500 households and 28 businesses within the floodplain, 100 of which are within the floodway. The planning team obtains the backup information from the FIRM used by the study contractor that performed their currently effective Flood Insurance Study. They then determine that the average 100-year flood depth in the floodway is 9 feet, and the average 100-year floodplain depth is 6 feet. They also determine that there are areas of high flow velocity in certain reaches of the stream, indicating that localized erosion may be a problem.

Scenario 2: Community B does not have detailed flood mapping; they have flood boundary information. The planning team estimates that, based upon the density and pattern of development in the community, approximately 15% of the housing and 20% of the businesses in the community lie in the 100-year floodplain. This is estimated visually by transferring the FIRM boundaries onto a land use map previously developed by the planning department. By multiplication, they determine that approximately 750 homes and 20 businesses are in the floodplain. The team then takes a USGS quadrangle map and estimates the average ground elevations within the floodway, and within the floodplain, and compares them with the average base flood elevation obtained from the FIRM. They determine that the average depth in the floodplain is 5 feet.

As the vulnerability assessment is completed, it is noted that given the zoning designation of currently vacant land within the floodplain, there is the potential for an additional 100 houses to be built in the floodplain. This is brought to the attention of the planning director.

Scenario 3: Community C works with the local university to have students do a "windshield survey" of the homes and businesses located in the floodplain. The students first obtain Q3 flood boundaries from www.hazardmaps.gov, and transfer them onto a new street map. They then use an old tax map to begin counting structures within the flood boundaries. Lastly, they take to the streets to visually count the number of homes and businesses that likely lie within the flood boundaries delineated on their street map. They determine there are 425 homes and 22 businesses within the flood boundaries.

In the examples above, each community arrived at the number of structures within the floodplain in a different manner, using the best data available to them, and using methods that matched the resources of the community. None of these communities used GIS, a tool often used in risk assessment activities.

Environmental Assessment and Data Collection Requirements

Question 10: Do the States have to prepare environmental assessments and collect data?

Answer: The regulations for enhanced plans at 201.5(b)(2)(iii) require "Demonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following…(B) Preparing and submitting accurate environmental reviews…."

The States **are not** required to prepare the formal environmental documents, but FEMA **does expect** them to perform much of the **data gathering and coordination** necessary to support the environmental review process.

FEMA's environmental regulations at **44 CFR Part 10.7** discuss FEMA's overall approach to integrating National Environmental Policy Act (NEPA) considerations with mitigation planning and project development. Paragraph 10.7(a) directs the FEMA Regional Director to "integrate the NEPA process with other planning at the earliest possible time to ensure that planning decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts."

To facilitate compliance with this approach, FEMA sets out its expectations for applicants for FEMA assistance, generally States, Tribal and local governments, in Paragraph 10.7(c)(2):

> *(2) To facilitate compliance with the requirements of paragraph (a) of this section, applicants and other non-federal entities are expected to:*
>
> (i) Contact the Regional Director as early as possible in the planning process for guidance on the scope and level of environmental information required to be submitted in support of their application;
>
> (ii) Conduct any studies which are deemed necessary and appropriate by FEMA to determine the impact of the proposed action on the human environment;
>
> (iii) Consult with appropriate federal, regional, State, and local agencies and other potentially interested parties during preliminary planning stages to ensure that all environmental factors are identified;
>
> (iv) Submit applications for all federal, regional, State, and local approvals as early as possible in the planning process;

(v) Notify the Regional Director as early as possible of all other federal, regional, State, local, and Indian Tribal actions required for project completion so that FEMA may coordinate all federal environmental reviews; and

(vi) Notify the Regional Director of all known parties potentially affected by or interested in the proposed action.

[45 FR 41142, June 18, 1980, as amended at 47 FR 13149, Mar. 29, 1982]

Plan Detail on Critical Facilities

Question 11: What level of detail is needed in the plan's identification of critical facilities?

Answer: The plan should provide enough information regarding critical facilities to enable the jurisdiction to identify and prioritize appropriate mitigation actions.

However, some information may be deemed as highly sensitive and should not be made available to the public. Such information that the jurisdiction considers sensitive should be treated as an addendum to the mitigation plan so that it is still a part of the plan, but access can be controlled. For more information on protecting sensitive information see How-To #7 *Integrating Human-Caused Hazards into Mitigation Planning* (FEMA 386-7).

Acquisition Project Addresses

Question 12: Are potential acquisition project property addresses required to be noted in the plan?

Answer: No. A list of potential properties or areas that are being considered for acquisition should be prepared in advance, as part of the mitigation strategy, but the specifics regarding property addresses should remain at the project level.

Unit 2: Local Plan Review – Prerequisites and Planning Process

Prerequisite(s)

What is the purpose of this portion of the Plan Review Requirements?

Prerequisites are intended to confirm the commitment of the state, tribe or local community to follow through with the implementation of the plan.

This commitment is confirmed through the approval and adoption of the plan by local officials, and demonstrated by their submittal of formal resolutions of adoption.

Prerequisite(s) – Single Jurisdiction

IFR Requirement: § 201.6 (c) (5) Adoption by the Local Governing Body (1/3)

A. Has the local governing body adopted the plan?

B. Is supporting documentation, such as a** (“signed and sealed”) **resolution, included?

Key Words and Issues

“local governing body” – i.e., the one that could be an HMGP subgrantee, such as a town's Board of Selectmen or Town Council, a City Council, County Commissioners, a Tribal Council, etc.

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Prerequisite(s) – Single Jurisdiction

IFR Requirement: § 201.6 (c) (5) Adoption by the Local Governing Body (cont’d)

Key Words and Issues (continued)

“**adopted**” versus “**approved**” – the local governing body must adopt the plan, the approval of the plan by the hazard mitigation team or another appointed body such as a planning commission is not enough

proof versus **assertions** – this is one of the few requirements where proof of compliance (i.e., a signed and sealed resolution) must be provided

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Prerequisite(s) – Multi-Jurisdictional

IFR Requirement: § 201.6 (c) (5) Multi-Jurisdictional Plan Adoption (2/3)

A. ***Does the plan indicate the specific jurisdictions represented in the plan?***

B. ***For each jurisdiction, has the local governing body adopted the plan?***

C. ***Is supporting documentation, such as a*** *("signed and sealed")* ***resolution, included for each participating jurisdiction?***

Key Words and Issues

Multi-Jurisdictional hazard mitigation plans can be pursued in a number of different ways but at the end of the process, each of the individual jurisdictions must adopt the plan to preserve their HMGP eligibility.

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Prerequisite(s) – Multi-Jurisdictional

IFR Requirement: § 201.6 (c) (5) Multi-Jurisdictional Plan Adoption (2/3 continued)

What if?

If a multi-jurisdictional plan identifies that a county and five constituent municipalities are "covered" by the plan but the submittal only includes resolutions of adoption from the county and four of the communities, is this requirement satisfied?

What if the fifth community never submits the resolution of adoption?

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Prerequisite(s) – Multi-Jurisdictional

IFR Requirement: § 201.6 (a) (3) Multi-Jurisdictional Planning Participation (3 of 3)

A. Does the plan describe how each jurisdiction participated in the plan's development?

Key Words and Issues

"**how**" versus "**how well**" – the former is quantitative (revisions can be required) and the latter is qualitative (revisions can only be recommended)

also note the potential overlap of this requirement with § 201.6 (c) (1) Documentation of Planning Process (slide 41)

FEMA

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Planning Process

What is the purpose of this portion of the Plan Review Requirements?

DMA 2000 is based on the premise that the hazard mitigation planning process needs to be as inclusive as possible.

The intent is to ensure that community values are expressed and that available information, expertise and resources are brought to bear on the community's issues to the extent possible.

FEMA

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Planning Process

IFR Requirement: § 201.6 (c) (1) Documentation of Planning Process (1 / 1)

A. ***Does the plan provide a narrative description of the process followed to prepare the plan?***

B. ***Does the plan indicate who was involved in the planning process?***

Key Words and Issues

"the process" may not always be defined or described in one tidy location in the plan

"who" can be satisfied by identifying organizations and/or agencies; names of individuals are not required

FEMA

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Planning Process

IFR Requirement: § 201.6 (c) (1) Documentation of Planning Process (1 / 1 cont'd)

C. ***Does the plan indicate how the public was involved?***

D. ***Was there an opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?***

Key Words and Issues

"opportunity" can be broadly interpreted and has both quantitative and qualitative aspects – relative success should be noted for review of Plan Maintenance Process

"**and**" versus "**or**"

FEMA

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Planning Process

IFR Requirement: § 201.6 (c) (1) Documentation of Planning Process (1 / 1 cont'd)

E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports and technical information?

Key Words and Issues

"appropriate" is in the eyes of the beholder

how will the reviewer know what, if anything is **"existing"?**

FEMA

Small Group Working Session – Prerequisites and Planning Process

This session covers pages 3 and 4 of the Crosswalk.

The end product is a completed plan review of the Prerequisite and Planning Process for the City of Darwin, Iowa plan.

FEMA

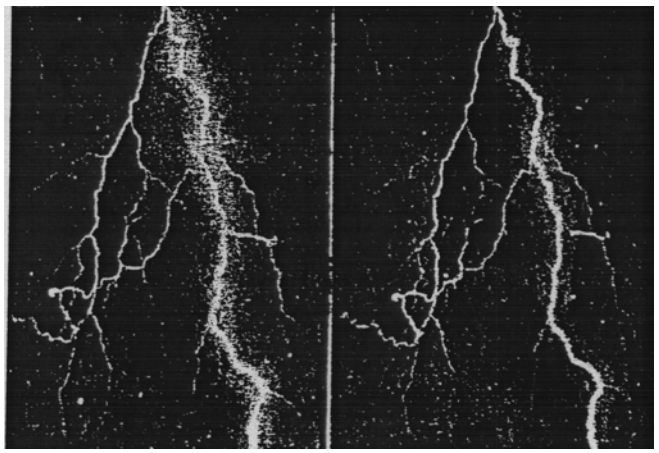
Small Group Results

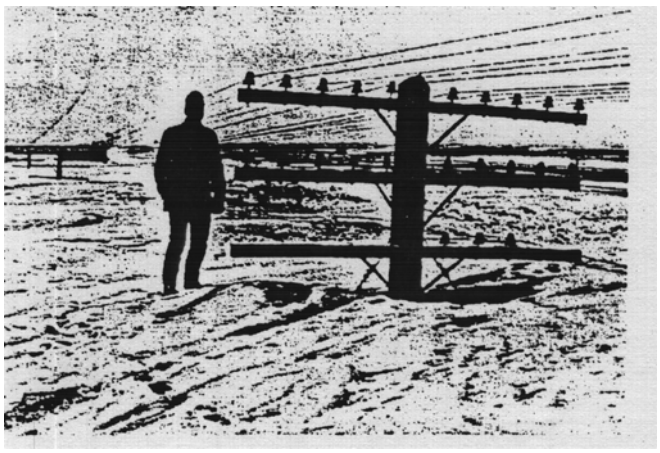
Prerequisites and Planning Process

Element	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
§201.6 (c) (5) Adoption by the Local Governing Body										
A. Adoption										
B. Supporting documentation										
§201.6 (c) (1) Documentation of Planning Process										
A. Description of the process followed to prepare the plan										
B. Who was involved in the planning process										
C. How the public was involved										
D. How neighboring communities, agencies, businesses, academia, nonprofits, other interested parties had the opportunity to be involved in the process										
E. How existing plans, studies, reports and technical information were reviewed and incorporated in the plan (if appropriate)										

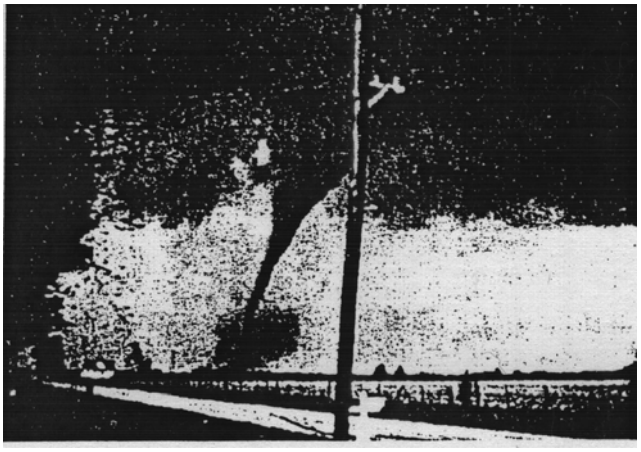
FEMA

DARWIN, IOWA





HAZARD MITIGATION PLAN



CITY OF DARWIN, IOWA

LOCAL HAZARD MITIGATION PLAN

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HAZARD MITIGATION PLAN

for

Darwin, Iowa

Purpose of Hazard Mitigation Plan

This hazard mitigation plan is being developed to assess the ongoing mitigation activities in the community, to evaluate mitigation measures that should be undertaken, and to outline a strategy for implementation of mitigation projects.

This Local Hazard Mitigation Plan was adopted on January 13, 2003

Authority: City of Darwin, Iowa

Public Meeting Date(s): January 13, 2003

The Planning Process

In 2002 the Darwin Department of Emergency Services (DES) was awarded a hazard mitigation planning grant by the State Emergency Management Agency (SEMA). After receiving the grant, DES formed the Hazard Mitigation Planning Committee (HMPC) to develop the Darwin Hazard Mitigation Plan.

A Project Initiation Meeting was held September 23, 2002 and was attended by the HMPC, consisting of seven agency representatives and SEMA representatives. The HMPC decided to create several sub-committees to work with the community and ensure they had adequate input into the Hazard Mitigation Plan. These sub-committees are the Risk Assessment Committee, the Agency Coordinating Committee, and the Public Outreach Committee. The HMPC hosted a series of working meetings to educate stakeholders about their risks, involve them in identifying issues, and educate them about alternative mitigation actions.

The HMPC meetings were held on the following days and are summarized as follows:

- September 23, 2002 – Project Initiation Meeting; this meeting was attended by several agency representatives and SEMA Representatives. The planning project was introduced and DMA 2000 requirements were explained. The planning process and project timeline were established.
- February 5, 2003 – Planning Team Workshop; attended by agency representatives and SEMA representatives. The hazard mitigation planning methodology and results for the draft hazard identification and vulnerability assessment were presented. A brief training session was given on involving the public in the planning process.
- February 24, 2003 – Planning Workshop; attended by agency representatives. The results of the draft vulnerability assessment and preliminary hazard mitigation plan were presented. The participants were given materials and instruction on how to best review and provide feedback on the results. Information was also presented on how to select appropriate mitigation actions for the identified vulnerabilities. Preliminary goals and objectives were established.
- March 13, 2003 – HMPC Committee Briefing; attended by members of the HMPC and Sub-committee Chairs. This meeting provided an overview and discussion of the hazard mitigation planning process, a review of the work accomplished to-date, and an outline of next steps.
- April 14, 2003 – Working Meeting; attended by HMPC and agency representatives. The agency representatives brought questions and comments from their constituents on the planning work completed to-date. Corrections to the maps were noted.
- April 15, 2003 – Public Information Meeting; attended by people representing the non-profit, public service, community development, private institutions, and utility sectors. Information on the draft vulnerability assessment, work accomplished to-date, and next steps were presented.
- July 1, 2003 – Working Meeting; attended by agency representatives. Reviewed the work-to-date on their review and field verification of the vulnerability assessment.
- September 15, 2003 – Working Meeting; attended by agency representatives. Draft mitigation recommendations for the identified vulnerabilities were handed out for review.

- October 27, 2003 – Draft Plan Review Meeting; attended by the HMPC and sub-committee representatives. The review comments from the 1st draft of the plan were discussed. Revisions to the plan were completed by November 15, 2003, and distributed for final review and comments.
- December 2, 2003 – Final Draft Plan Review Meeting; attended by the HMPC and sub-committee representatives. The review comments from the final draft of the plan were discussed. Final revisions to the plan were completed by December 15, 2003, and distributed for public review.
- January 6, 2004 – A public hearing was held to collect general public feedback. Revisions to the plan were completed by January 19, 2004, and the plan went for final production on January 27, 2004.

The Hazard Mitigation Planning Committee informed participants about these meetings through various means, including newsletters, letters, and newspaper ads.

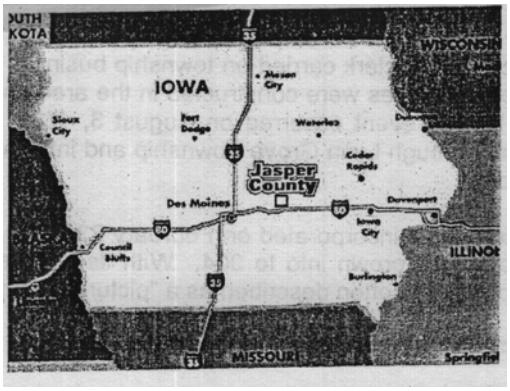
COMMUNITY PROFILE
CONTENTS

Community Profile

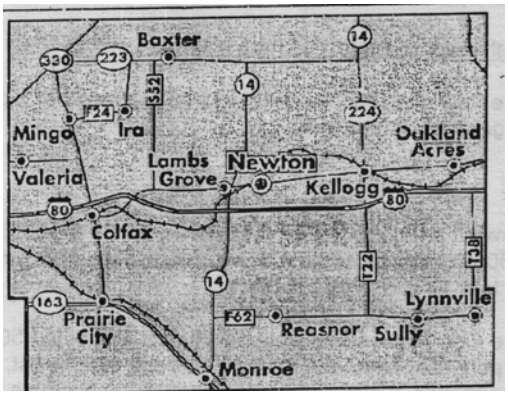
Location

The City of Darwin is located in southeastern Beagle County. The community is 10 miles from Interstate 80, 18 miles from Newton, and 43 miles from Des Moines.

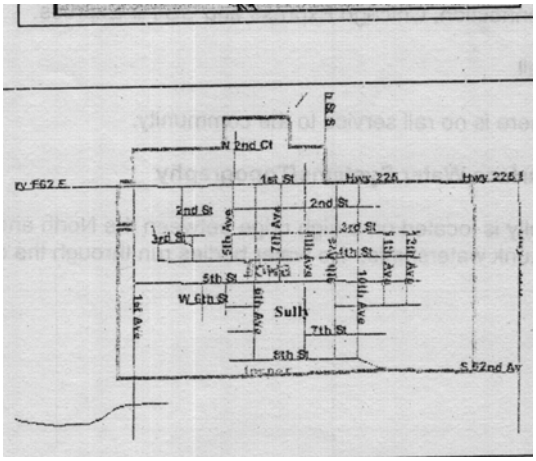
STATE OF IOWA



BEAGLE COUNTY



CITY OF DARWIN



History

Darwin lies along an old wagon train road called "The Diamond Trail." The county commissioners “laid off” Lynn Grove township, where the town of Darwin is located, on May 14, 1846. Lynn Grove was one of the three original townships. The other two were Fairview and Elk Creek. Elk Creek Township adjoins Lynn Grove Township on the west.

Early settlers of the area played an important part in the development of the town. Records show that trustees and a clerk carried on township business as early as 1973. When several businesses and a number of homes were constructed in the area, the residents concluded that a town should be plated. This historic event occurred on August 3, 1882. In 1883, Alfred Darwin, a railroad magnate, built a railroad through Lynn Grove Township and influenced the establishment of a depot that was named in his honor.

The town was incorporated on February 23, 1901. The population at that time was 150. Since then, the town has grown into to 904. With its well-kept houses, yards and flowers, parks and business district, Darwin is often described as a "picture book town."

Source: City Clerk, City of Darwin

Transportation

Highway/Interstate

The Interstate 80 interchange is 15 minutes north of Darwin. State Highway 223 runs along the northern edge of the community.

Air

Newton's general aviation airport is located about 20 miles northwest of the City. The airport has a 5,600 ft. runway and full service capability. The airport routinely handles both prop and jet aircraft with up to a 16 passenger capacity.

The Des Moines International Airport is located 50 miles northwest. Airlines serving the Des Moines Airport are American, America West, Northwest, TWA, United, Skyway, Vanguard, Com Air-Delta Connection, Chicago Express and US Air Express.

Rail

There is no rail service to the community.

Surface Water Systems/Topography

Darwin is located on a high ridge between the North and South Skunk Rivers within the North and South Skunk watersheds. No water bodies run through the community.

Climate

Average Monthly Temperatures

Month	Avg. High	Avg. Low	Mean	Avg. Precip.	Record High	Record Low
Jan	27°F	8°F	17°F	1.20 in.	60°F (1956)	-34°F (1974)
Feb	33°F	13°F	23°F	1.28 in.	74°F (1930)	-35°F (1996)
Mar	46°F	24°F	35°F	2.40 in.	90°F (1910)	-17°F (1962)
Apr	59°F	34°F	47°F	3.58 in.	92°F (1980)	1°F (1982)
May	70°F	45°F	58°F	4.31 in.	98°F (1925)	22°F (1907)
Jun	80°F	56°F	68°F	4.64 in.	102°F (1911)	35°F (1993)
Jul	84°F	61°F	73°F	4.09 in.	106°F (1911)	29°F (1920)
Aug	82°F	58°F	70°F	4.41 in.	107°F (1930)	36°F (1950)
Sep	75°F	49°F	62°F	3.55 in.	101°F (1925)	21°F (1984)
Oct	63°F	37°F	50°F	2.73 in.	95°F (1963)	2°F (1925)
Nov	46°F	25°F	36°F	2.41 in.	82°F (1968)	-15°F (1976)
Dec	32°F	14°F	23°F	1.47 in.	69°F (1998)	-32°F (1985)

Source: Weather Channel

Population/Age

The 2000 census reported a population of 904 compared to a 1990 population of 841 an increase of 7.49%. 28.5% of the population is under 18, 51.5% between 18 and 65, and 20% 64 and over. The median age is 38.7 years. 99.8% of the population identified themselves as “white”, 0.2% identified themselves as “Asian.”

Darwin Iowa, Population Characteristics

Subject	Number	Percent
Total Population	**904**	**100.0**
SEX AND AGE		
Male	439	48.6
Female	465	51.4
Under 5 years	62	6.9
5 to 19 years	219	24.3
20 to 34 years	121	13.4
35 to 54 years	238	26.3
55 to 74 years	175	19.4
75 and over	89	9.8
Median age (years)	38.7	(X)

Subject	Number	Percent
18 years and over	646	71.5
Male	312	34.5
Female	334	36.9
65 years and over	181	20.0
Male	75	8.3
Female	106	11.7
RACE		
One race	904	100.0
White	902	99.8
Asian	2	0.2
Korean	2	0.2
RELATIONSHIP		
Total population	**904**	**100.0**
In households	904	100.0
In group quarters	0	0.0
HOUSEHOLDS		
Total households	**348**	**100.0**
Family households (families)	271	77.9
Nonfamily households	77	22.1
Households with individuals under 18 years	126	36.2
Households with individuals 65 years and over	121	34.8
Average household size	2.6	(X)
Average family size	3.03	(X)

(x) Not Applicable
Source: U.S. Bureau of the Census, Census 2000

Housing Occupancy

The total number of housing units identified in the 2000 census Housing Occupancy/Tenure category was 360. The occupancy rate was 96.7% (348 unites). The number of owner-occupied housing units was 294 (84.5%) and the number of renter-occupied housing units 54 (15.5%). The average household size of owner-occupied units was reported as 2.76 and the average household size of renter-occupied units was 1.74.

Housing Characteristics

The City has experienced growth in new residential real estate and projects continued growth. The 2000 Census reported 33 units (9.1 %) were built between 1990 and March 2000. No new housing permits have been issued since 2000. North Slope Addition is the most recent housing development with the final plat approved October 1995. All eight (8) lots in this addition are sold with two (2) remaining vacant at this time.

In the category Selected Housing Characteristics, the 2000 Census reported 362 total housing units. 4 (1.1 %) housing units were built between January 1999 and March 2000. 20 (5.5%) were built between 1995 and 1998. 9 (2.5%) were built between 1990 and 1995. 50 (13.8%) units were built during the 1980s, 82 (22.7) during the 1970s, and 43 (11.9) during the 1960s. 67 (42.5%) units were built between 1940 and 1959 and 87 units (24.0%) in 1939 or earlier. The median room size was reported as 6 rooms. The median value of owner-occupied houses was reported as $81,800. The following table displays Selected Housing Characteristics reported in the 2000 Census.

Profile of Selected Housing Characteristics: 2000

Subject	Number	Percent
Total housing units	**362**	**100.0**
UNITS IN STRUCTURE		
1-unit, detached	315	87.0
1-unit, attached	9	2.5
2 units	12	3.3
3 or 4 units	16	4.4
5 to 9 units	10	2.8
YEAR STRUCTURE BUILT		
1999 to March 2000	4	1.1
1995 to 1998	20	5.5
1990 to 1994	9	2.5
1980 to 1989	50	13.8
1970 to 1979	82	22.7
1960 to 1969	43	11.9
1940 to 1959	67	18.5
1939 to earlier	87	24.0
ROOMS		
1 room	2	0.6
2 rooms	2	0.6
3 rooms	9	2.5
4 rooms	49	13.5
5 rooms	82	22.7
6 rooms	73	20.2
7 rooms	64	17.7
8 rooms	43	11.9
9 or more rooms	38	10.5

Subject	Number	Percent
Median (rooms)	6.0	(X)
HOUSE HEATING FUEL		
Utility gas	175	50.3
Bottled, tank, or LP gas	30	8.6
Electricity	105	30.2
Fuel oil, kerosene, etc.	34	9.8
No fuel used	2	0.6
Specified owner-occupied units	**275**	**100.0**
VALUE		
Less than $50,000	22	8.0
$50,000 to $99,999	166	60.4
$100,000 to $149,999	73	26.5
$150,000 to $199,999	12	4.4
$200,000 to $299,999	2	0.7
Median (dollars)	81,800	(X)
MORTGAGE STATUS AND SELECTED MONTHLY OWNER COSTS		
With a mortgage	131	47.6
Less than $300	0	0.0
$300 to $499	8	2.9
$500 to $699	32	11.6
$700 to $999	48	17.5
$1,000 to $1,499	38	13.8
$1,500 to $1,999	5	1.8
Median (dollars)	844	(X)
Not mortgaged	144	52.4
Median (dollars)	278	(X)
Specified renter-occupied units	**46**	**100.0**
GROSS RENT		
Less than $200	6	13.0
$200 to $299	6	13.0
$300 to $499	13	28.3
$500 to $749	17	37.0
$750 to $999	2	4.3
No cash rent	2	4.3
Median (dollars)	442	(X)

Subject	Number	Percent
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999		
Less than 15 percent	13	28.3
15 to 19 percent	11	23.9
20 to 24 percent	4	8.7
25 to 29 percent	2	4.3
30 to 34 percent	11	23.9
35 percent or more	3	6.5
Not computed	2	4.3

(x) Not Applicable
Source: U.S. Bureau of the Census, Census 2000

Education

Darwin is part of the Lynnville-Darwin Community School District, which includes Darwin and Lynnville. The district serves appropriately 541 students. The Elementary, Middle, and High School are located at 12476 Highway 225E.

The Darwin Christian School is a K-8 school that is run by the Christian School Society. The school has a total of 150 students.

School Enrollment – Population 3 Years and Over

Subject	Number	Percent
Population 3 years and over enrolled in school	**341**	**100.0**
Nursery school, preschool	17	21
Kindergarten	18	7.5
Elementary school (grades 1-8)	129	53.5
High school (grades 9-12)	61	25.3
College or graduate school	16	6.6

Source: U.S. Bureau of the Census, Census 2000

Education Attainment.

Of the 580 residents over 25, 77.1% have attained a high school diploma or higher and 12.9% have attained a bachelor's degree or higher. The following summarized the 2000 census data:

Education Attainment

Subject	Number	Percent
Population 25 years and over	**580**	**100.0**
Less than 9th grade	115	19.8
9th to 12th grade, no diploma	18	3.1
High school graduate (includes equivalency)	274	47.2
Some college, no degree	65	11.2
Associate degree	33	5.7
Bachelor's degree	51	8.6
Graduate or professional degree	24	4.1
Percent high school graduate or higher	77.1	(X)
Percent bachelor's degree or higher	12.9	(X)

Source: U.S. Bureau of the Census, Census 2000

Economic Characteristics

The following table provides a summary of the 2000 Census Profile of Selected Economic Characteristics:

Subject	Number	Percent
EMPLOYMENT STATUS		
Population 16 years and over	**674**	**100.0**
In labor force	455	67.5
Civilian labor force	455	67.5
Employed	441	65.4
Unemployed	14	2.1
Percent of civilian labor force	3.1	(X)
Not in labor force	219	32.5
Females 16 years and over	**344**	**100.0**
In labor force	200	58.1
Civilian labor force	200	58.1
Employed	190	55.2
Own children under 6 years	**80**	**100.0**
All parents in family in labor force	63	78.8

Subject	Number	Percent
COMMUTING TO WORK		
Workers 16 years and over	**440**	**100.0**
Car, truck, or van -- drove alone	336	76.4
Car, truck, or van -- carpooled	27	6.1
Walked	45	10.2
Other means	5	1.1
Worked at home	27	6.1
Mean travel time to work (minutes)	17.0	(X)
Employed civilian population 16 years and over	**441**	**100.0**
OCCUPATION		
Management, professional, and related occupations	108	24.5
Service occupations	44	10.0
Sales and office occupations	125	28.3
Farming, fishing, and forestry occupations	2	0.5
Construction, extraction, and maintenance occupations	64	14.5
Production, transportation, and material moving occupations	98	22.2
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	23	5.2
Construction	40	9.1
Manufacturing	116	26.3
Wholesale trade	11	2.5
Retail trade	38	8.6
Transportation and warehousing, and utilities	30	6.8
Information	9	2.0
Finance, insurance, real estate, and rental and leasing	22	5.0
Professional, scientific, management, administrative, and waste management services	18	4.1
Educational, health and social services	70	15.9
Arts, entertainment, recreation, accommodation and food services	14	3.2
Other services (except public administration)	39	8.8
Public administration	11	2.5
CLASS OF WORKER		
Private wage and salary workers	371	84.1
Government workers	39	8.8
Self-employed workers in own not incorporated business	31	7.0

Subject	Number	Percent
INCOME IN 1999		
Households	**338**	**100.0**
Less than $10,000	15	4.4
$10,000 to $14,999	6	1.8
$15,000 to $24,999	23	6.8
$25,000 to $34,999	58	17.2
$35,000 to $49,999	78	23.1
$50,000 to $74,999	95	28.1
$75,000 to $99,999	43	12.7
$100,000 to $149,999	16	4.7
$150,000 to $199,999	2	0.6
$200,000 or more	2	0.6
Median household income (dollars)	47,344	(X)
With earnings	262	77.5
Mean earnings (dollars)	50,963	(X)
With Social Security income	123	36.4
Mean Social Security income (dollars)	12,854	(X)
With Supplemental Security Income	10	3.0
Mean Supplemental Security Income (dollars)	5,910	(X)
With public assistance income	6	1.8
Mean public assistance income (dollars)	300	(X)
With retirement income	45	13.3
Mean retirement income (dollars)	10,913	(X)
Families	**267**	**100.0**
Median family income (dollars)	54,018	(X)
Per capita income (dollars)	19,506	(X)
Median earnings (dollars):		
Male full-time, year-round workers	36,563	(X)
Female full-time, year-round workers	25,446	(X)

Subject	Number	Percent
POVERTY STATUS IN 1999 (below poverty level)		
Families	**3**	**(X)**
Percent below poverty level	(X)	1.1
Families with female householder, no husband present	**2**	**(X)**
Percent below poverty level	(X)	14.3
Individuals	**17**	**(X)**
Percent below poverty level	(X)	1.9
18 years and over	15	(X)
Percent below poverty level	(X)	2.4
65 years and over	4	(X)
Percent below poverty level	(X)	2.2

Source: U.S. Census Bureau, Census 2000

Business and Industry

Darwin's business community includes over 60 businesses within one square mile. Basic services are provided by such businesses as the grocery store, service stations, bank, restaurants, insurance office, flower store, hardware and lumber stores, barber and hair stylists, and satellite offices of doctors, dentist, lawyers, and accountants. Several businesses provide supplies and services specifically for the agricultural community. There are also several trucking firms in and around the area that transport livestock, fuel, fertilizer, feed and grain.

The Darwin Co-op Exchange is the largest single employer. The cooperative is divided into three units. The elevator department provides seed, feed, fertilizer, grain storage and marketing. The oil department provides fuel, lubricant, tires, propane and a full service shop for cars, pickups, trucks, and tractors. The lumber department provides lumber and related products and provides planning and construction for farm, light commercial, and residential buildings.

Source: City of Darwin

Community Services, Facilities and Infrastructure

Water System

The municipal well and water treatment plant use reverse osmosis for water purification. The Capacity of the water plant is 215,000 gallons. Average consumption is 75,000 gallons per day and peak consumption is 125,000 gallons per day.

Wastewater Treatment

The municipal wastewater treatment plant has been upgraded to provide the City with a state of the art facility that meets State requirements.

Sanitary Sewer System

In the past the City experienced stormwater infiltration resulting in damage to the sanitary sewer system and back-up into basements. The City conducted smoke and camera testing throughout the system and instituted a repair/replacement program. In addition, the City passed and enforces a city ordinance prohibiting residential property owners from connecting their residential drainage systems (sump pumps, gutters) into the sanitary sewer system.

Emergency Services

Law Enforcement:

The Darwin police chief is available 24-hour a day. The community has a contract with the county to provide back-up officers and coverage when the full time staff is not available. In addition, the community participates in the Beagle County Selective Enforcement Response Team (SERT) and the Beagle/Poweshiek County Drug Task Force. Jail and dispatcher services are provided by the County Sheriff's office located in Newton. The E-911 system is countywide.

Fire-Ambulance

The Darwin Rural Fire and Ambulance Department provide fire and ambulance services. 19 volunteers staff the department. 15 are certified as EMT -D's and 2 as EMT -A's. The department is housed in a fire station that was completed in 1992. The station includes parking for the vehicles, wash bays, storage room, offices, bathrooms, and a training and meeting room.

Equipment used by the fire department includes two pumpers, one tanker, quick attack unit, equipment van and a well equipped ambulance.

The fire and ambulance services are tax supported and also receive contributions for equipment purchased.

Emergency Management

The Beagle County Emergency Management Coordinator, in coordination with a local emergency manager, provides emergency management system (mitigation, preparedness, response, and recovery) services for the community.

Utilities

- Telephone — Darwin Telephone Company
- Natural Gas — Alliant Energy
- Water — City
- Sanitation — City
- Electricity — Alliant Energy

Medical Services

The nearest hospital is the Skiff Medical Center. Skiff Medical Center is a 68-bed primary care hospital located in Newton. The Center provides 24-hour emergency medical services, kidney dialysis, home care, surgery, obstetrics, intensive care, acute care, rehabilitation therapies, women's health services, and alternative health services. In addition, a wide range of medical services are available in Des Moines, Grinnell, and Pella.

The Darwin Family Health Center provides medical services for Darwin.

The Family Dentistry group provides dental services.

Other Plans

Darwin Strategic Plan, November 1992

Critical Facilities

Critical facilities are structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk. The Planning Committee identified the following critical facilities: (See Appendix A for Critical Facilities Map)

Facilities essential to the health and welfare of the entire population, especially following a hazard event:

- City HaII/Emergency Operations Center
- Fire Station
- Medical Clinics
- City Maintenance Building
- Emergency Shelters (School/Churches)

Transportation systems:

- State Highway 225

Lifeline Utility systems:

- Wastewater Treatment Plant
- Water Plant
- City Wells

Vulnerable Population Centers:

- School
- Retirement Home

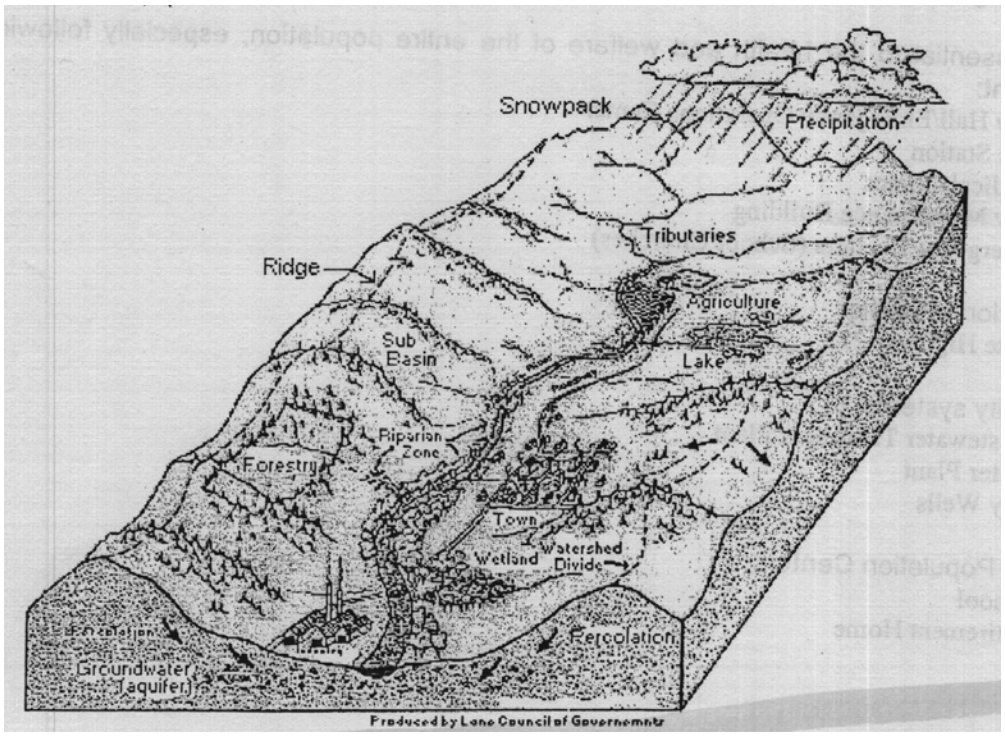
Major Rivers/Watershed§

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. John Wesley Powell, scientist geographer, put it best when he said that a watershed is:

> "that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. No matter a community is located it is in a watershed. The EPA's Office of Water, along with many local groups and State agencies, has been emphasizing the importance of organizing water quality improvement efforts on a watershed basis.

Watershed Components



Source: http://www.epa.gov

Because watersheds are defined by natural hydrology, they represent the most logical basis for managing water resources. The resource becomes the focal point and managers are able to gain a more complete understanding of overall conditions In an area and the stresses that affect those conditions.

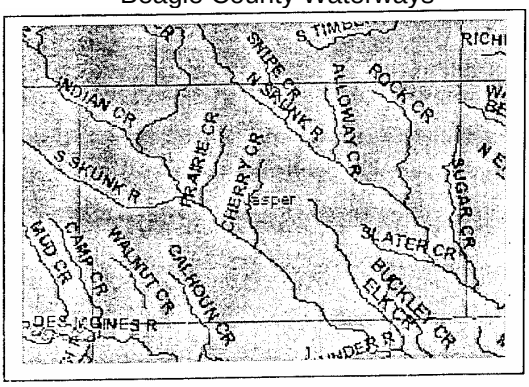
Traditionally, water quality improvements have focused on specific sources of pollution, such as sewage discharges, or specific water resources, such as a river segment or wetland. While this approach may be successful in addressing specific problems, it often fails to address the more subtle and chronic problems that contribute to a watershed's decline. For example, pollution from a sewage treatment plant might be reduced significantly after a new technology is installed and yet the local river may still suffer if other factors in the watershed, such as habitat destruction or polluted runoff, go unaddressed.

Watershed management can offer a stronger foundation for uncovering the many stresses that affect a watershed. The result is management better equipped to determine what actions are needed to protect or restore the resource. Major features of a Watershed Protection Approach are: targeting priority problems, promoting a high level of stakeholder involvement, integrated solutions that make use of the expertise and authority of multiple agencies, and measuring success through monitoring and other data gathering.

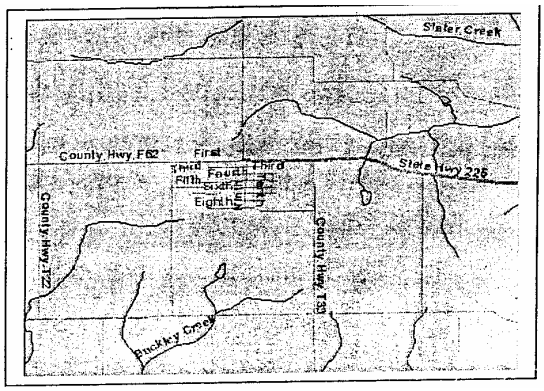
Darwin Watershed

Darwin is located in the South Skunk and North Skunk Watersheds. There is no surface water in the City of Darwin.

Beagle County Waterways



Darwin

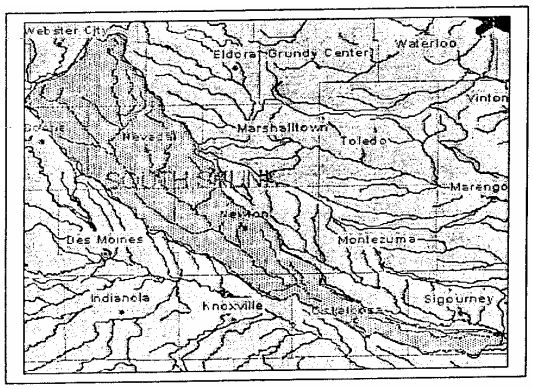


Source: EnviroMapper

South Skunk Watershed

Rivers and Streams in this Watershed: 16
Lakes in the watershed: 213 Total
Number of watershed acres: 1838.3
River and stream miles:

- 2319.5 total river miles
- 982.1 perennial river miles
- No data available: % of total rivers and streams have been surveyed
- No data available: miles meet all designated uses

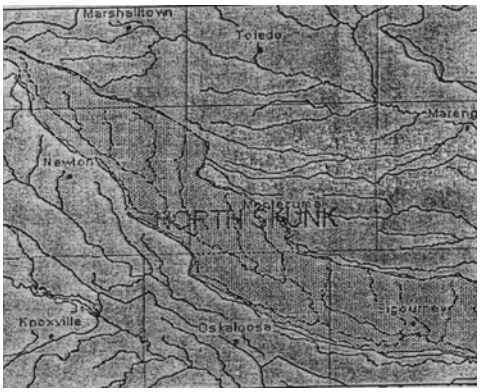


Aquifer	Sq. Miles	Rock Type
Mississippian aquifers	619	Sandstone and carbonate-rock aquifers
No Principal Aquifer	1245	N/A

North Skunk Watershed

Rivers and Streams in this Watershed: 13
(provided by EPA's first River Reach File)
Lakes in the watershed: 113
Total number of watershed acres: 1561.9
River and stream miles:

- 1292 total river miles
- 553.3 perennial river miles
- No data available: % of total rivers and streams have been surveyed
- No data available: miles meet all designated uses



Aquifer	Square Miles	Rock Type
Mississippian aquifers	542	Sandstone and carbonate-rock aquifers
No Principal Aquifer	321	N/A

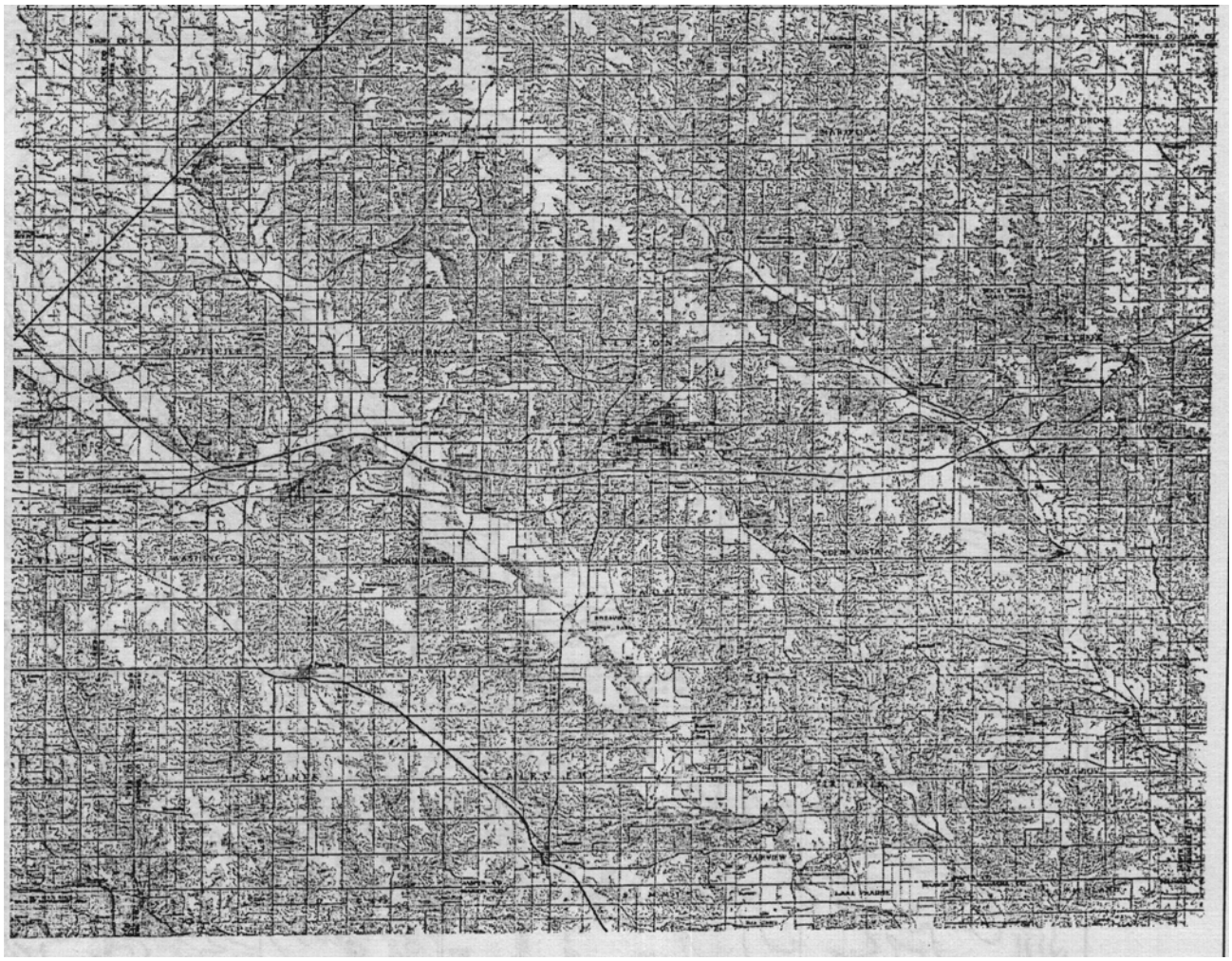
APPENDIX A

COMMUNITY PROFILE

TABLE OF CONTENTS

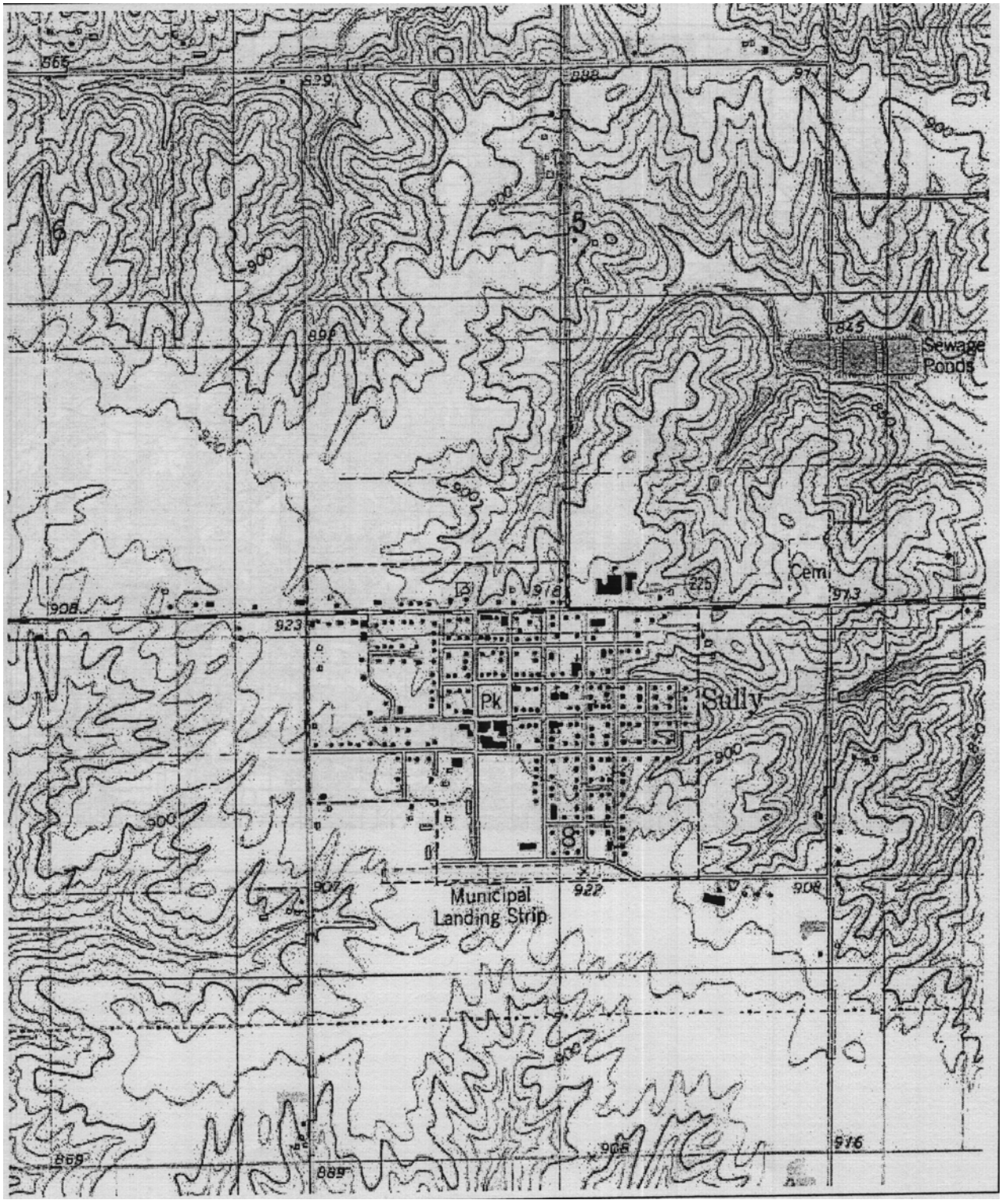
BEAGLE COUNTY

TOPOGRAPHY MAP

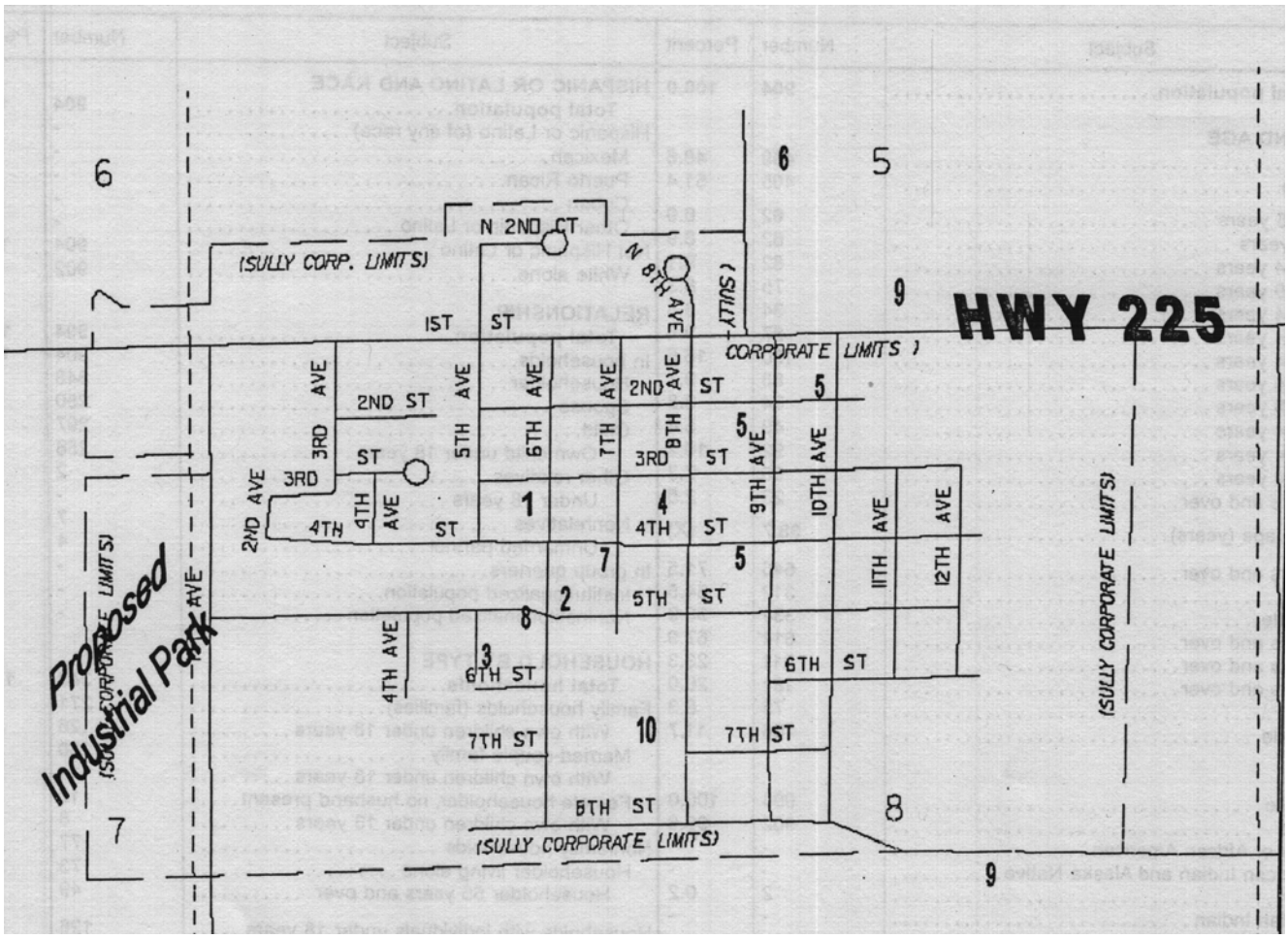


DARWIN, IOWA

TOPOGRAPHY MAP



City of Darwin -- Critical Facilities



Essential Facilities
1. Community Center/City Hall/Emergency Operations Center
2. Fire Station
3. City Maintenance Building
4. Medical Clinic
5. Emergency Shelters (Churches)

Lifeline Utility Systems
6. Wastewater Plant
7. Water Plant
8. CityWells

Transportation System: Highway 225

Vulnerable populations
9. Schools
10. Retirement Home

Table DP-1. Profile of General Demographic Characteristics: 2000
Geographic Area: Darwin city, Iowa
[For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent
Total population	904	100.0
SEX AND AGE		
Male	439	48.6
Female	465	51.4
Under 5 years	62	6.9
5 to 9 years	62	6.9
10 to 14 years	82	9.1
15 to 19 years	75	8.3
20 to 24 years	34	3.8
25 to 34 years	87	9.6
35 to 44 years	150	16.6
45 to 54 years	88	9.7
55 to 59 years	34	3.8
60 to 64 years	49	5.4
65 to 74 years	92	10.2
75 to 84 years	66	7.3
85 years and over	23	2.5
Median age (years)	38.7	(X)
18 years and over	646	71.5
Male	312	34.5
Female	334	36.9
21 years and over	614	67.9
62 years and over	211	23.3
65 years and over	181	20.0
Male	75	8.3
Female	106	11.7
RACE		
One race	904	100.0
White	902	99.8
Black or African American	-	-
American Indian and Alaska Native	-	-
Asian	2	0.2
Asian Indian	-	-
Chinese	-	-
Filipino	-	-
Japanese	-	-
Korean	2	0.2
Vietnamese	-	-
Other Asian [1]	-	-
Native Hawaiian and Other Pacific Islander	-	-
Native Hawaiian	-	-
Guamanian or Chamorro	-	-
Samoan	-	-
Other Pacific Islander [2]	-	-
Some other race	-	-
Two or more races	-	-
Race alone or in combination with one or more other races: [3]		
White	902	99.8
Black or African American	-	-
American Indian and Alaska Native	-	-
Asian	2	0.2
Native Hawaiian and Other Pacific Islander	-	-
Some other race	-	-

Subject	Number	Percent
HISPANIC OR LATINO AND RACE		
Total population	904	100.0
Hispanic or Latino (of any race)	-	-
Mexican	-	-
Puerto Rican	-	-
Cuban	-	-
Other Hispanic or Latino	-	-
Not Hispanic or Latino	904	100.0
White alone	902	99.8
RELATIONSHIP		
Total population	904	100.0
In households	904	100.0
Householder	348	38.5
Spouse	250	27.7
Child	297	32.9
Own child under 18 years	258	28.5
Other relatives	2	0.2
Under 18 years	-	-
Nonrelatives	7	0.8
Unmarried partner	4	0.4
In group quarters	-	-
Institutionalized population	-	-
Noninstitutionalized population	-	-
HOUSEHOLD BY TYPE		
Total households	348	100.0
Family households (families)	271	77.9
With own children under 18 years	126	36.2
Married-couple family	250	71.8
With own children under 18 years	114	32.8
Female householder, no husband present	12	3.4
With own children under 18 years	8	2.3
Nonfamily households	77	22.1
Householder living alone	73	21 0
Householder 65 years and over	49	14.1
Households with individuals under 18 years	126	36.2
Households with individuals 65 years and over	121	34.8
Average household size	2.60	(X)
Average family size	3.03	(X)
HOUSING OCCUPANCY		
Total housing units	360	100.0
Occupied housing units	348	96.7
Vacant housing units	12	3.3
For seasonal, recreational, or occasional use	-	-
Homeowner vacancy rate (percent)	1.0	(X)
Rental vacancy rate (percent)	6.9	(X)
HOUSING TENURE		
Occupied housing units	348	100.0
Owner-occupied housing units	294	84.5
Renter-occupied housing units	54	15.5
Average household size of owner-occupied units	2.76	(X)
Average household size of renter-occupied units	1.74	(X)

- Represents zero or rounds to zero. (X) Not applicable.
[1] Other Asian alone, or two or more Asian categories.
[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.
[3] In combination with one or more of the other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.

Source: U.S. Census Bureau, Census 2000.

Table DP-2. Profile of Selected Social Characteristics: 2000
Geographic Area: Darwin city, Iowa
[Data based on a sample. For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent
SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school	**241**	**100.0**
Nursery school, preschool	17	7.1
Kindergarten	18	7.5
Elementary school (grades 1-8)	129	53.5
High school (grades 9-12)	61	25.3
College or graduate school	16	6.6
EDUCATIONAL ATTAINMENT		
Population 25 years and over	**580**	**100.0**
Less than 9th grade	115	19.8
9th to 12th grade, no diploma	18	3.1
High school graduate (includes equivalency)	274	47.2
Some college, no degree	65	11.2
Associate degree	33	5.7
Bachelor's degree	51	8.8
Graduate or professional degree	24	4.1
Percent high school graduate or higher	77.1	(X)
Percent bachelor's degree or higher	12.9	(X)
MARITAL STATUS		
Population 15 years and over	**689**	**100.0**
Never married	112	16.3
Now married, except separated	493	71.6
Separated	6	0.9
Widowed	51	7.4
Female	41	6.0
Divorced	27	3.9
Female	11	1.6
GRANDPARENTS AS CAREGIVERS		
Grandparent living in household with one or more own grandchildren under 18 years	-	-
Grandparent responsible for grandchildren	-	-
VETERAN STATUS		
Civilian population 18 years and over	**629**	**100.0**
Civilian veterans	60	9.5
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION		
Population 5 to 20 years	**236**	**100.0**
With a disability	9	3.8
Population 21 to 64 years	**424**	**100.0**
With a disability	46	10.8
Percent employed	71.7	(X)
No disability	378	89.2
Percent employed	88.1	(X)
Population 65 years and over	**180**	**100.0**
With a disability	55	30.6
RESIDENCE IN 1995		
Population 5 years and over	**840**	**100.0**
Same house in 1995	596	71.0
Different house in the U.S. in 1995	240	28.6
Same county	174	20.7
Different county	66	7.9
Same state	58	6.9
Different state	8	1.0
Elsewhere in 1995	4	0.5

Subject	Number	Percent
NATIVITY AND PLACE OF BIRTH		
Total population	**903**	**100.0**
Native	890	98.6
Born in United States	888	98.3
State of residence	839	92.9
Different state	49	5.4
Born outside United States	2	0.2
Foreign born	13	1.4
Entered 1990 to March 2000	4	0.4
Naturalized citizen	11	1.2
Not a citizen	2	0.2
REGION OF BIRTH OF FOREIGN BORN		
Total (excluding born at sea)	**13**	**100.0**
Europe	11	84.6
Asia	-	-
Africa	-	-
Oceania	-	-
Latin America	2	15.4
Northern America	-	-
LANGUAGE SPOKEN AT HOME		
Population 5 years and over	**840**	**100.0**
English only	814	96.9
Language other than English	26	3.1
Speak English less than "very well"	13	1.5
Spanish	-	-
Speak English less than "very well"	-	-
Other Indo-European languages	26	3.1
Speak English less than "very well"	13	1.5
Asian and Pacific Island languages	-	-
Speak English less than "very well"	-	-
ANCESTRY (single or multiple)		
Total population	**903**	**100.0**
Total ancestries reported	*959*	*106.2*
Arab	-	-
Czech[1]	-	-
Danish	2	0.2
Dutch	631	69.9
English	68	7.5
French (except Basque)[1]	6	0.7
French Canadian[1]	-	-
German	152	16.8
Greek	-	-
Hungarian	-	-
Irish[1]	25	2.8
Italian	-	-
Lithuanian	-	-
Norwegian	1	0.1
Polish	2	0.2
Portuguese	-	-
Russian	-	-
Scotch-Irish	-	-
Scottish	2	0.2
Slovak	-	-
Subsaharan African	-	-
Swedish	4	0.4
Swiss	3	0.3
Ukrainian	-	-
United States or American	44	4.9
Welsh	3	0.3
West Indian (excluding Hispanic groups)	-	-
Other ancestries	16	1.8

-Represents zero or rounds to zero. (X) Not applicable.
[1]The data represent a combination of two ancestries shown separately in Summary File 3. Czech includes Czechoslovakian. French includes Alsatian. French Canadian includes Acadian/Cajun. Irish includes Celtic.

Source: U.S. Bureau of the Census, Census 2000.

Table DP-3. Profile of Selected Economic Characteristics: 2000
Geographic Area: Darwin city, Iowa
[Data based on a sample. For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent
EMPLOYMENT STATUS		
Population 16 years and over	674	100.0
In labor force	455	67.5
Civilian labor force	455	67.5
Employed	441	65.4
Unemployed	14	2.1
Percent of civilian labor force	3.1	(X)
Armed Forces	-	-
Not in labor force	219	32.5
Females 16 years and over	344	100.0
In labor force	200	58.1
Civilian labor force	200	58.1
Employed	190	55.2
Own children under 6 years	80	100.0
All parents in family in labor force	63	78.8
COMMUTING TO WORK		
Workers 16 years and over	440	100.0
Car, truck, or van - - drove alone	336	76.4
Car, truck, or van - - carpooled	27	6.1
Public transportation (including taxicab)	-	-
Walked	45	10.2
Other means	5	1.1
Worked at home	27	6.1
Mean travel time to work (minutes)[1]	17.0	(X)
Employed civilian population 16 years and over	441	100.0
OCCUPATION		
Management, professional, and related occupations	108	24.5
Service occupations	44	10.0
Sales and office occupations	125	28.3
Farming, fishing, and forestry occupations	2	0.5
Construction, extraction, and maintenance occupations	64	14.5
Production, transportation, and material moving occupations	98	22.2
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	23	5.2
Construction	40	9.1
Manufacturing	116	26.3
Wholesale trade	11	2.5
Retail trade	38	8.6
Transportation and warehousing, and utilities	30	6.8
Information	9	2.0
Finance, insurance, real estate, and rental and leasing	22	5.0
Professional, scientific, management, administrative, and waste management services	18	4.1
Educational, health and social services	70	15.9
Arts, entertainment, recreation, accommodation and food services	14	3.2
Other services (except public administration)	39	8.8
Public administration	11	2.5
CLASS OF WORKER		
Private wage and salary workers	371	84.1
Government workers	39	8.8
Self-employed workers in own not incorporated business	31	7.0
Unpaid family workers	-	-

Subject	Number	Percent
INCOME IN 1999		
Households	338	100.0
Less than $10,000	15	4.4
$10,000 to $14,999	6	1.8
$15,000 to $24,999	23	6.8
$25,000 to $34,999	58	17.2
$35,000 to $49,999	78	23.1
$50,000 to $74,999	95	28.1
$75,000 to $99,999	43	12.7
$100,000 to $149,999	16	4.7
$150,000 to $199,999	2	0.6
$200,000 or more	2	0.6
Median household income (dollars)	47,344	(X)
With earnings	262	77.5
Mean earnings (dollars)[1]	50,963	(X)
With Social Security income	123	36.4
Mean Social Security income (dollars)[1]	12,853	(X)
With Supplemental Security Income	10	3.0
Mean Supplemental Security Income (dollars)[1]	5,910	(X)
With public assistance income	6	1.8
Mean public assistance income (dollars)[1]	300	(X)
With retirement income	45	13.3
Mean retirement income (dollars)[1]	10,912	(X)
Families	267	100.0
Less than $10,000	3	1.1
$10,000 to $14,999	2	0.7
$15,000 to $24,999	12	4.5
$25,000 to $34,999	41	15.4
$35,000 to $49,999	55	20.6
$50,000 to $74,999	91	34.1
$75,000 to $99,999	43	16.1
$100,000 to $149,999	16	6.0
$150,000 to $199,999	2	0.7
$200,000 or more	2	0.7
Median family income (dollars)	54,018	(X)
Per capita income (dollars)[1]	19,506	(X)
Median earnings (dollars):		
Male full-time, year-round workers	36,563	(X)
Female full-time, year-round workers	25,446	(X)

Subject	Number below poverty level	Percent below poverty level
POVERTY STATUS IN 1999		
Families	3	1.1
With related children under 18 years	2	1.5
With related children under 5 years	2	4.0
Families with female householder, no husband present	2	14.3
With related children under 18 years	2	20.0
With related children under 5 years	2	100.0
Individuals	17	1.9
18 years and over	15	2.4
65 years and over	4	2.2
Related children under 18 years	2	0.7
Related children 5 to 17 years	-	-
Unrelated individuals 15 years and over	10	13.0

-Represents zero or rounds to zero. (X) Not applicable.
[1]If the denominator of a mean value or per capita value is less than 30, then that value is calculated using a rounded aggregate in the numerator. See text.
Source: U.S. Bureau of the Census, Census 2000.

Table DP-4. Profile of Selected Housing Characteristics: 2000
Geographic Area: Darwin city, Iowa
[Data based on a sample. For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent	Subject	Number	Percent
Total housing units	362	100.0	OCCUPANTS PER ROOM		
UNITS IN STRUCTURE			Occupied housing units	348	100.0
1-unit, detached	315	87.0	1.00 or less	348	100.0
1-unit, attached	9	2.5	1.01 to 1.50	-	-
2 units	12	3.3	1.51 or more	-	-
3 or 4 units	16	4.4			
5 to 9 units	10	2.8	Specified owner-occupied units	275	100.0
10 to 19 units	-	-	VALUE		
20 or more units	-	-	Less than $50,000	22	8.0
Mobile home	-	-	$50,000 to $99,999	166	60.4
Boat, RV, van, etc	-	-	$100,000 to $149,999	73	26.5
			$150,000 to $199,999	12	4.4
YEAR STRUCTURE BUILT			$200,000 to $299,999	2	0.7
1999 to March 2000	4	1.1	$300,000 to $499,999	-	-
1995 to 1998	20	5.5	$500,000 to $999,999	-	-
1990 to 1994	9	2.5	$1,000,000 or more	-	-
1980 to 1989	50	13.8	Median (dollars)	81,800	(X)
1970 to 1979	82	22.7			
1960 to 1969	43	11.9	MORTGAGE STATUS AND SELECTED MONTHLY OWNER COSTS		
1940 to 1959	67	18.5			
1939 or earlier	87	24.0	With a mortgage	131	47.6
			Less than $300	-	-
ROOMS			$300 to $499	8	2.9
1 room	2	0.6	$500 to $699	32	11.6
2 rooms	2	0.6	$700 to $999	48	17.5
3 rooms	9	2.5	$1,000 to $1,499	38	13.8
4 rooms	49	13.5	$1,500 to $1,999	5	1.8
5 rooms	82	22.7	$2,000 or more	-	-
6 rooms	73	20.2	Median (dollars)	844	(X)
7 rooms	64	17.7	Not mortgaged	144	52.4
8 rooms	43	11.9	Median (dollars)	278	(X)
9 or more rooms	38	10.5			
Median (rooms)	6.0	(X)	SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999		
Occupied housing units	348	100.0			
YEAR HOUSEHOLDER MOVED INTO UNIT			Less than 15.0 percent	163	59.3
1999 to March 2000	38	10.9	15.0 to 19.9 percent	49	17.8
1995 to 1998	67	19.3	20.0 to 24.9 percent	33	12.0
1990 to 1994	49	14.1	25.0 to 29.9 percent	11	4.0
1980 to 1989	79	22.7	30.0 to 34.9 percent	6	2.2
1970 to 1979	79	22.7	35.0 percent or more	13	4.7
1969 or earlier	36	10.3	Not computed	-	-
VEHICLES AVAILABLE			Specified renter-occupied units	46	100.0
None	-	-	GROSS RENT		
1	86	24.7	Less than $200	6	13.0
2	193	55.5	$200 to $299	6	13.0
3 or more	69	19.8	$300 to $499	13	28.3
			$500 to $749	17	37.0
HOUSE HEATING FUEL			$750 to $999	2	4.3
Utility gas	175	50.3	$1,000 to $1,499	-	-
Bottled, tank, or LP gas	30	8.6	$1,500 or more	-	-
Electricity	105	30.2	No cash rent	2	4.3
Fuel oil, kerosene, etc	34	9.8	Median (dollars)	442	(X)
Coal or coke	-	-			
Wood	2	0.6	GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999		
Solar energy	-	-			
Other fuel	-	-	Less than 15.0 percent	13	28.3
No fuel used	2	0.6	15.0 to 19.9 percent	11	23.9
			20.0 to 24.9 percent	4	8.7
SELECTED CHARACTERISTICS			25.0 to 29.9 percent	2	4.3
Lacking complete plumbing facilities	-	-	30.0 to 34.9 percent	11	23.9
Lacking complete kitchen facilities	-	-	35.0 percent or more	3	6.5
No telephone service	-	-	Not computed	2	4.3

-Represents zero or rounds to zero. (X) Not applicable.

Source: U.S. Bureau of the Census, Census 2000.

Local Mitigation Plan Review and Approval Status

Jurisdiction: City of Darwin, Iowa	**Title of Plan: Hazard Mitigation Plan**	**Date of Plan:** January 13, 2003
Local Point of Contact:	**Address:**	
Title:		
Agency:		
Phone Number:	**E-Mail:**	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region VII		
Plan Not Approved		
Plan Approved		
Date Approved		

Jurisdiction:	**NFIP Status***			
	Y	**N**	**N/A**	**CRS Class**
1. City of Darwin, Iowa				

*** Notes:** **Y = Participating** **N = Not Participating** **N/A = Not Mapped**

Jurisdiction: City of Darwin, Iowa

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted.

Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Prerequisite(s) (Check Applicable Box)	NOT MET	MET
Adoption by the Local Governing Body: §201.6(c)(5) **OR**	✓	
Multi-Jurisdictional Plan Adoption: §201.6(c)(5) **AND**	N/A	N/A
Multi-Jurisdictional Planning Participation: §201.6(a)(3)	N/A	N/A

Planning Process	N	S
Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)	✓	

Risk Assessment	N	S
Identifying Hazards: §201.6(c)(2)(i)		✓
Profiling Hazards: §201.6(c)(2)(i)	✓	
Assessing Vulnerability: Overview: §201.6(c)(2)(ii)		✓
Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)	✓	
Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)	✓	
Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)	✓	
Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)	N/A	N/A

Mitigation Strategy	N	S
Local Hazard Mitigation Goals: §201.6(c)(3)(i)		✓
Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)	✓	
Implementation of Mitigation Actions: §201.6(c)(3)(iii)	✓	
Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)	N/A	N/A

Plan Maintenance Process	N	S
Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)	✓	
Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)	✓	
Continued Public Involvement: §201.6(c)(4)(iii)	✓	

Additional State Requirements*	N	S
Insert State Requirement		
Insert State Requirement		
Insert State Requirement		

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED	✓
PLAN APPROVED	

*States that have additional requirements can add them in the appropriate sections of the *Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

See Reviewer's Comments

PREREQUISITE(S)

Adoption by the Local Governing Body

***Requirement §201.6(c)(5)*:** *[The local hazard mitigation plan **shall** include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Has the local governing body adopted the plan?	Inside Cover			✓
B. Is supporting documentation, such as a resolution, included?	Not in the Plan	No copy was found in the plan. **Required Revisions:** • Include a copy of the formal resolution in the plan. For more information about adopting the mitigation plan, see *Bringing the Plan to Life* (FEMA 386-4), Step 1.	✓	
		SUMMARY SCORE	✓	

Multi-Jurisdictional Plan Adoption

***Requirement §201.6(c)(5)*:** *For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Does the plan indicate the specific jurisdictions represented in the plan?				
B. For each jurisdiction, has the local governing body adopted the plan?				
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?				
		SUMMARY SCORE	**N/A**	**N/A**

Multi-Jurisdictional Planning Participation

Requirement §201.6(a)(3): *Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process … Statewide plans will not be accepted as multi-jurisdictional plans.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Does the plan describe **how** each jurisdiction participated in the plan's development?				
		SUMMARY SCORE	**N/A**	**N/A**

PLANNING PROCESS: ***§****201.6(b): An open public involvement process is essential to the development of an effective plan.*

Documentation of the Planning Process

Requirement §201.6(b): *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:*
(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
(2) An opportunity for neighboring jurisdictions, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): *[The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan provide a narrative description of the process followed to prepare the plan?	No Page Number	**Recommended Revisions:** • Number the pages in this section of the plan (e.g., i, ii, etc.).		✓
B. Does the plan indicate who was involved in the planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided	No Page Number	The plan indicates that a Hazard Mitigation Planning Committee with sub-committees was formed, involving the representation of various City agencies. However, there is no mention of the name of these agencies.	✓	

information, reviewed drafts, etc.?)		**Required Revisions:** • Describe who was involved in the planning process. **Recommended Revisions:** • Include in the description how each member contributed to the process. Describe who led the development of the plan at the staff level, whether there were external contributors (such as a contractor), and what other interested parties were involved. For more information on identifying the stakeholders and building the planning team, see *Getting Started* (FEMA 386-1), Step 2.		
C. Does the plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)	No Page Number			✓
D. Was there an opportunity for neighboring jurisdictions, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	No Page Number	Although the plan states that a Public Information Meeting was held with the participation of non-profit organizations, private institutions, community development organizations, etc., it is not clear which organizations were represented in the meeting and how they were involved in the process. The plan does not indicated whether or not opportunities were given to neighboring communities to participate in the process. **Required Revisions:** • Discuss how local, State and Federal agencies, neighboring jurisdictions, local businesses, community leaders, educators, and other relevant private and nonprofit interest groups participated in the plan development. **Recommended Revisions:** • Include the names of the organizations involved in the process. For more ideas on identifying stakeholders, enlisting partners, and choosing an appropriate public participation model, see *Getting Started* (FEMA 386-1), Steps 2 and 3.	✓	
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?	Not in the Plan	The plan makes no reference to the review, analysis, and incorporation of existing documents consulted in the development of the plan.	✓	

		Required Revisions: • Describe how the jurisdiction reviewed and integrated information in the plan from existing plans, studies, reports, and technical documents.		
			SUMMARY SCORE	✓	

Unit 3: Local Plan Review – Risk Assessment

Risk Assessment

What is the purpose of this portion of the Plan Review Requirements?

DMA 2000 places a strong emphasis on a sound and comprehensive risk assessment as the foundation for a coherent hazard mitigation plan.

The intent is to ensure that the community is focusing available resources where they will be most effective in reducing exposure and risk.

Risk Assessment

IFR Requirement: § 201.6 (c) (2) (i) Identifying Hazards (1 of 7)

A. Does the plan include a description of the types of all natural hazards that affect the jurisdiction?

Key Words and Issues

"**descriptions**" vary in terms of what constitutes a hazard – e.g., are "hurricanes" a hazard?
= water (= coastal erosion; coastal flooding; and inland flooding) and
= wind (= wind borne debris; structural failures)

how will the reviewer know what constitutes "**all natural hazards**"?

"**manmade**" versus "**natural hazards**" = not required by DMA 2000
= official FEMA language), aka human-caused
= accidental and/or intentional technological events, terrorism, etc.

FEMA

Risk Assessment

IFR Requirement: § 201.6 (c) (2) (i) Identifying Hazards (1 of 7 continued)

What if?

What if a hazard is not mentioned at all but the rest of the plan is basically satisfactory?

What does that mean for subsequent reviews of the plan?

FEMA

Risk Assessment

IFR Requirement: § 201.6 (c) (2) (i) Profiling Hazards (2 of 7)

Does the risk assessment identify the

A. location (e.g., hazard area)

B. extent (e.g., magnitude, severity)

C. previous occurrences

D. probability of future events (e.g., "high/medium/low" at a minimum of each hazard addressed in the plan)?

Key Words and Issues

how can the communities (and the reviewers) handle "**data deficiencies**" (in this and subsequent requirements)?

FEMA

Risk Assessment

IFR Requirement: § 201.6 (c) (2) (i) Profiling Hazards (2 of 7 continued)

What if?

What if the plan identifies that the best available data (b.a.d.!?) was used but adequate information is not currently available (aka data deficiencies)…

…and is specific about the data that is needed but not present…

…but subsequent sections of the plan do not outline steps for gathering data and completing the assessment over the next planning cycle as a mitigation action?

Should this requirement be scored as satisfactory?

FEMA

Risk Assessment

IFR Requirement: § 201.6 (c) (2) (ii) Assessing Vulnerability: Overview (3/7)

A. Does the plan include an overall summary description of the jurisdiction's vulnerability to each hazard?

What if?

*Would an "**overall summary description**" of vulnerable assets that only mentions generalized land use zones (residential, commercial, industrial) satisfy this Element?*

Would the same description with quantities (buildings, people, etc.) derived from "global" data such as the U.S. Census satisfy this Element?

FEMA

Risk Assessment

IFR Requirement: § 201.6 (c) (2) (ii) Assessing Vulnerability: Overview (3/7 cont'd)

B. Does the plan address the impact of each hazard on the jurisdiction?

What if?

*would expressing the "**impact**" only in terms of the areas within the community that would be affected without the number of vulnerable assets by hazard and without addressing the value and/or percentage of damage anticipated for those assets, and/or the number of the population at risk (per Understanding Your Risk (FEMA 386-2) meet this element?*

FEMA

Risk Assessment

IFR Requirement ["should"]:
§ 201.6 (c) (2) (ii) (A) Assessing Vulnerability: Identifying Assets (4 of 7)

A. Does the plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure and critical facilities located in the identified hazard areas?

B. Does the plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure and critical facilities located in the identified hazard areas?

Key Words and Issues

"**future**" buildings, etc. cannot be reliably predicted in the absence of a community master plan, comprehensive plan or some type of development projections

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Risk Assessment

IFR Requirement ["should"]:
§ 201.6 (c) (2) (ii) (B) Assessing Vulnerability: Estimating Potential Loss (5 of 7)

A. Does the plan estimate potential dollar losses to vulnerable structures?

B. Does the plan describe the methodology used to prepare the loss estimate?

Key Words and Issues

it is not unusual to see "**potential dollar losses**" expressed in terms of total property value, i.e., a building in a flood zone that is assumed to be a 100% loss

descriptions of "**methodology**" may not be very "satisfying" but may still clear the bar - refinements may only be identifiable as recommended revisions

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Risk Assessment

IFR Requirement ["should"]:
§ 201.6 (c) (2) (ii) (B) Assessing Vulnerability: Estimating Potential Loss (5/7 cont'd)

What if?

What if the results are inherently flawed due to low quality data inputs but the methodology is "scientifically based"?

FEMA

Risk Assessment

IFR Requirement ["should"]:
§ 201.6 (c)(2)(ii)(C) Assessing Vulnerability: Analyzing Development Trends (6 of 7)

A. Does the plan describe land uses and development trends?

What if?

If the plan only includes a description of existing land use and an anecdotal assessment of growth trends (ala "we got houses and businesses and factories and we expect to get some more someday"), would this meet the requirement?

FEMA

Risk Assessment

IFR Requirement:
§ 201.6 (c)(2)(iii) Multi-Jurisdictional Risk Assessment (7 of 7)

A. Does the plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?

Key Words and Issues

"unique and varied risks" is open to interpretation – it is important to focus on making sure that multi-jurisdictional plans do not paint the risks with too broad a brush – it is also important to note that as a reviewer, you will only know what they tell you in most cases - if there is a risk assessment in the plan, how will you know if it is or is not reflecting **"unique"** conditions?

FEMA

Small Group Working Session – Risk Assessment

This session covers pages 5, 6 and the top half of page 7 of the Crosswalk.

The end product is a completed plan review of the Risk Assessment for the City of Darwin, Iowa plan.

FEMA

Small Group Results

Risk Assessment

Element	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
§ 201.6 (c) (2) (i) Identifying Hazards										
A. Description of all natural hazards that affect										
§ 201.6 (c) (2) (i) Profiling Hazards										
A. Location of hazards										
B. Extent of hazards										
C. Information on previous occurrences										
D. Probability of future hazard events included										
§ 201.6 (c) (2) (iii) Assessing Vulnerability: Overview										
A. Overall summary of jurisdiction's vulnerability to each hazard										
B. Impact of each hazard on jurisdiction addressed										

FEMA

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Small Group Results

Risk Assessment (continued)

Element	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
§ 201.6 (c) (2) (ii) (A) Assessing Vulnerability: Identifying Structures										
A. Description of types and number of existing buildings et al										
B. Description of types and number of future buildings et al										
§ 201.6 (c) (2) (ii) (B) Assessing Vulnerability: Estimating Potential Loss										
A. Estimate of potential dollar losses to vulnerable structures										
B. Description of methodology used to prepare loss estimate										
§ 201.6 (c) (2) (ii) (C) Assessing Vulnerability: Analyzing Development Trends										
A. Description of land uses and development trends										

FEMA

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HAZARD ANALYSIS – RISK ASSESSMENT
CONTENTS

HAZARD ANALYSIS AND RISK ASSESSMENT

Before a community can assess ongoing mitigation activities, evaluate mitigation measures that should be undertaken or outline a strategy for implementing mitigation projects; it must be aware of those hazards which, if they occur, could harm the community.

The hazard analysis identifies potential hazards that could affect the City of Darwin for the purposes of mitigation planning. It is important to note that the focus of mitigation is on reducing long-term risks of damage or threats to public health and safety caused by hazards and their effects. Thus, in some cases the hazards identified for mitigation will not include all of or the same hazards identified for preparedness, response or recovery.

The potential hazards identified for the City of Darwin are:

- Flooding
- Tornado/High Wind Events
- Severe Thunderstorms
- Winter Storms
- Earthquake
- Drought
- Hazardous Materials

The risk assessment identifies how people, properties, and structures will be damaged by the event. If the hazard can harm people or damage their homes and other structures, they are vulnerable. Finding the weak points in the system, for example, identifying building types that are vulnerable to damage and anticipating the loss in high risk areas, will help the community decide what mitigation measure should be undertaken and how to implement the activities they select.

In making their hazard analysis and risk assessment, the Darwin Planning Committee considered the following

- Historical Occurrence
- Probability
- Vulnerability
- Maximum Threat
- Severity of Impact
- Speed of Onset

The following tables define each factor and the rating scale the Planning Committee used to assess the hazards risk to the community.

Historical Occurrence – Number of times that a hazard has occurred in the community in the past

Rating	Number of Historical Occurrences
1-3	Less than 4 occurrences
3-5	4 to 7 occurrences
5-7	8 to 12 occurrences
7-9	More than 12 occurrences

Probability – Likelihood of the hazard occurrence, sometimes without regard to hazard history

Rating	Likelihood	Frequency of occurrence
1-3	Unlikely	Less than 1% probability in the next 100 years
3-5	Possible	Between 1 and 10% probability in the next year, or at least one chance in the next 100 years
5-7	Likely	Between 10 and 100% probability in next year, or at least one chance in the next 10 years
7-9	Highly Likely	Near 100% chance in the next year

Vulnerability – Measure of the percentage of people and property that would be affected by the hazard event

Rating	Magnitude	Percentage of people and property affected
1-3	Negligible	Less than 10%
3-5	Limited	10 to 25%
5-7	Critical	25 to 50%
7-9	Catastrophic	More than 50%

Maximum Threat – Spatial extent of the community that might be impacted

Rating	Magnitude	Percentage of jurisdiction that can be affected
1-3	Negligible	Less than 10%
3-5	Limited	10 to 25%
5-7	Critical	25 to 50%
7-9	Catastrophic	More than 50%

Severity of Impact – Assessment of the severity in terms of fatalities, injuries, property losses, and economic losses

Rating	Likelihood	Characteristics
1-3	Negligible	Few if any injuries or illness. Minor quality of life lost with little or no property damage. Brief interruption of essential facilities and services for less than four hours.
3-5	Limited	Minor injuries and illness. Minor or short tern property damage which does not threaten structural stability. Shutdown of essential facilities and services for 4 to 24 hours.
5-7	Critical	Serious injury and illness. Major or long term property damage, which threatens structural stability. Shutdown of essential facilities and services for 24 to 72 hours.
7-9	Catastrophic	Multiple deaths. Property destroyed or damaged beyond repair. Complete shutdown of essential facilities and services for 3 days or more.

Speed of Onset – Potential amount of warning time available before the hazard occurs.

Rating	Probable amount of warning time
1-3	More than 24 hours warning time.
3-5	12 to 24 hours warning time.
5-7	5 to 12 hours warning time.
7-9	Minimal or no warning time.

Natural Hazard: Flood	
Definition	Riverine Flood: A rising and overflowing of rivers and streams onto normally dry land. The most common type of flood event. The primary causes of Riverine flooding are rainfall, melting snow, or a combination of rainfall and melting snow. Flash Flood: A flood that rises and falls very quickly and is usually characterized by high flow velocities. Flash floods often result from intense rainfall over a small area.
Description	The extent of flood damage is influenced by six characteristics: depth or elevation of flooding, flow velocity, flood frequency, rate of rise and fall, duration, and debris impact. (See Appendix for a discussion of these characteristics.) Riverine Flooding. The volume of water in the floodplain is a function of the size of the contributing watershed and topographic characteristics such as watershed shape and slope, and climatic and land-use characteristics. (See Community Profile). Flash Flooding. In urban areas, flash flooding is an increasingly serious problem due to the removal of vegetation, paving and replacement of ground cover by impermeable surfaces that increase runoff, and construction of drainage systems that increase the speed of runoff. Of all the natural hazards occurring in the U.S., flooding occurs most often; at least 90% of disasters in the U.S. are floods. In Iowa, it is estimated that flooding causes annual damages exceeding $543 million. FEMA has not identified a special flood hazard area in the City.
Historical Occurrence	Historically, Darwin has not experienced riverine flooding within the corporate limits. During the 1960s, there was frequent flash flooding, Darwin experienced flash flooding in low-lying areas and infiltration into the sanitary sewer system. However, in 1996 the City did a storm sewer project to mitigate the flooding problems. During periods of heavy rains ponding occurs at a few intersections if storm water intakes have become blocked by debris (sticks, leaves, etc.) washed down with the rain. There have been no damages or traffic interruptions. The Committee estimates that flash flooding currently occurs every 4 to 6 years.
Probability	No special flood hazard areas have been identified in Darwin. Historically, moderate flash flooding occurs approximately every four to six years.
Vulnerability	The Committee estimates that riverine flooding would not impact the community. The City is aware that if annexation occurs into areas identified as part of the County floodplain or areas that are regulated under State Law, this situation could change. FEMA has not identified any Special Flood Hazard Areas in unincorporated areas adjacent to Darwin.

	The City monitors annexation and new developments and construction within the new developments. Any annexed areas would be incorporated into the City's zoning ordinances. Flash flooding impacts less than 5% of the people and property in the community.
Maximum Threat	None of the area within the current City limits is threatened by riverine flooding. The Committee estimates that flash flooding impacts less than 5% of the jurisdiction.
Severity of Impact	There are no interruptions of essential services due to the flash flooding. Property damage is limited to minor basement and landscaping damage. Estimated cost of basement damage from flooding and sewer back-up ranges from $500 to $1200. Street flooding may occur for short periods of time. The City has taken steps to lessen the impact of flash flooding by enforcing ordinances to prevent home owners from tying gutter-drain spouts and sump pumps into the storm water system, upgrading the City's stormwater drainage system, and conducting testing (smoke tests and camera) of the sewer system to identify vulnerable areas that may need repair. In addition, the City has implemented a maintenance program to clean and inspect vulnerable portions of the sanitary sewer main line each year.
Speed of Onset	The Committee estimates that they have more than 24 hours of warning time of conditions that could result in flash flooding.

Natural Hazard: Tornado/Extreme Wind	
Definition	Tornado: A violently rotating column of air extending from a thunderstorm to the ground. Extreme Wind: High straight line winds (58 miles per hour or greater) and microbursts (powerful downdrafts).
Description	Each year approximately 1,000 tornadoes are spawned by severe thunderstorms. Although most tornadoes remain aloft, in an average year, 800 tornadoes are reported nationwide, resulting in 80 deaths and over 1,500 injuries. Over the past 20 years, 106 Federal disaster declarations included damage associated with tornadoes. Tornadoes follow the path of least resistance. People living in valleys, which normally are the most highly developed areas, have the greatest exposure. The most violent tornadoes are capable of tremendous destruction and wind speeds can approach 300 miles per hour. Tornadoes have been known to lift and move huge objects, destroy or move whole buildings long distances and siphon large volumes from bodies of water. Damage paths can be in excess of one mile wide and 50 miles long. The Fujita Tornado Scale measures tornado damage severity. The scale assigns numerical values based on wind speeds and categorizes tornadoes from 0 to 5. The original Fujita wind damage scale had two sections added to further categorize tornadoes by the lengths and widths of their damage paths. (Fujita-Pearson Scale). Considering path length and width as welt as wind speeds provides a more comprehensive estimation of damages. (See Fujita-Pearson Scale below) Extreme winds other than tornadoes are experienced in all regions of the U.S. It is difficult to separate the various wind components that cause damage from other wind-related natural events that often occur with or generate windstorms. The three primary sources of extreme winds are: hurricanes and tropical storms, severe thunderstorms, and winter storms. Windstorms and wind-related events caused 63 fatalities in 1993. Over the past 20 years, 193 Federal disaster declarations involved wind-induced damage.
Historical Occurrence	In Iowa, most tornadoesoccur in thespring and summer months in the late afternoon to evening hours, but they can occur in every month of the year and at any time of the day. Between 1950 and 1995, Iowa averaged 31 tornadoes per year. Of these approximately 11 were rated as "strong-violent" (F2 or higher). Between January 1950 and April 30, 2002, 17 tornadoes were reported in Beagle County, none of the reported tornadoes occurred prior to August of 1965. During the same time period, 85 high wind events were reported. (See Appendix for historical data.) No tornadoes have been reported in Darwin. Two extreme wind events have been reported, both in June 1998. Winds speeds of 65 and 70 knots per hour were reported. Total reported property damages were $195,000. Typical damages included roof damage, broken windows, and damages to trees.

Probability	According to FEMA, Iowa is within the "moderate risk" area for tornadoes and "high risk" area for winds. The Uniform Building Code wind risk map shows 80 miles per hour as Darwin/jasper County's 50-year return period fastest mile speed. According to NOAA records, Darwin is in an area experiencing 25-30 significant (F-2 or greater) tornadoes in a 100-year period (4 year frequency) and 1.5-1.75 high wind days (75 miles per hour or greater) per year.
Vulnerability	Following the 1999 tornadoes in Oklahoma and Kansas, FEMA assessed the performance of buildings during the tornadoes. They found that manufactured homes and those that did not meet established building codes sustain the greatest damages. Other vulnerable segments of the population include: • People in automobiles • People in camp grounds • People who do not understand the meaning of warnings, particularly if there are language barriers • People who do not hear the warning sirens (outside the coverage area). • People who are unable to reach shelter areas due to distance of shelter or physical limitations • The elderly and the very young. People living in manufactured homes (mobile homes) are particularly vulnerable to extreme winds, particularly if building codes do not cover manufactured homes. There are no mobile homes in Darwin. Older homes in deteriorating condition are also vulnerable. The Committee noted that homes in Darwin are well maintained and, thus, less susceptible to damage. The Planning Committee felt that homes built between 1940 and 1959 were more vulnerable to those constructed prior to 1939 due to building practices and material availability during this period of time. 67 (18.5%) of the housing units in Darwin were built between 1940 and 1959 and 87 (24%) were built prior to 1939. The majority of these homes are multi-level, with basements and well maintained. However, the Committee agreed these homes would probably be the most vulnerable to damage. The value of 60.4% of the owner-occupied units is between $50,000 and $99,000. 26.5% of the owner-occupied homes are valued between $100,000 and $149,000. The median value of owner-occupied units is $81,000. The Community Center houses City Hall and serves as the Emergency Operations Center. All fire-emergency response equipment is housed in one location. Therefore, a direct "hit" on the Community Center and/or fire station could result in a loss of essential services. Neighboring communities could provide emergency services through existing agreements; however, the financial loss would be catastrophic for the community.
Maximum Threat	The path width of a tornado is usually less than .6 of a mile. The path length can range from a few hundred feet to over a mile. A tornado typically moves at speeds between 40 and 125 miles per hour. The lifespan of a tornado is seldom longer than 30 minutes. The threat can be substantially increased by accompanying thunderstorms, lightning and hail. In some cases, a thunderstorm may generate multiple tornadoes. Because a tornado or high winds can strike anywhere, the entire community is at risk.

Severity of Impact	A tornado typically moves at speeds between 40 and 125 miles per hour and can generate internal winds exceeding 300 miles per hour. In Beagle County, one of the reported tornadoes was an F4, two were F3's, four were F2's and the remainder were FO's. Potential impact/damages range from roof damage and minor property damage resulting from flying debris to total destruction and loss of life. Although residents could find shelter in basements, if the basements are exposed due to upper level damage, residents would be in danger from flying debris and projectiles. Flying debris could result in injuries. Structures could also sustain damage from trees falling on the structure. The Planning Committee reviewed the potential impact/damage table below and agreed the most likely impact would be moderate damage to residential and commercial properties; and brief interruptions in essential services. They agreed severe high-wind and tornado events could result in deaths and property damaged beyond repair and interruption or delay of essential services for 2 to 3 days.
Speed of Onset	Tornado and severe weather watches provide warning that conditions are favorable for the development of a tornado. Recent advances tracking storms and disseminating storm information have improved warning times. However, tornadoes can develop rapidly and often are characterized by rapid changes in direction. Citizens in Darwin, receive warning via sirens and NOAA weather radio. County and City officials closely monitor severe weather and have identified vulnerable segments of the population that may need assistance. The fire department delivers warning directly to vulnerable areas of the population. The NWS reported the citizens had 25 minutes warning (time between the first severe weather warning and the event) for a recent (March 2002) Beagle County event.

Fujita-Pearson Scale

Scale	Fujita Wind Speed	Pearson Path Length	Pearson Path Width
---	0 – 40 mph	Less than 0.3 miles	Less than 6 yards
0	40 – 72 mph	0.3 – 0.9 miles	6 – 17 yards
1	73 – 112 mph	1.0 – 3.1 miles	18 – 55 yards
2	113 – 157 mph	3.2 – 9.9 miles	56 – 175 yards
3	158 – 206 mph	10 – 31 miles	176 – 566 yards
4	207 – 260 mph	32 – 99 miles	0.3 – 0.9 miles
5	261 – 318 mph	100 – 315 miles	1.0 – 3.1 miles

TORNADO- POTENTIAL IMPACT AND DAMAGE

Managing Risk	Fujita Scale	Description of Damage
The threat to property and personal safety can be minimized through compliance with up-to-date model building codes and engineering standards.	F0	Some damage can be seen to poorly maintained roofs. Unsecured lightweight objects, such as trashcans, are displaced.
	F1	Minor damage to roofs and broken windows occur. Larger and heavier objects become displaced. Minor damage to trees and landscaping can be observed.
Property and personal protection can be improved through wind hazard mitigation techniques not normally required by current building codes.	F2	Roofs are damaged, including the loss of shingles and some sheathing. Manufactured homes on nonpermanent foundations can be shifted off their foundations. Trees and landscaping either snap or are blown over. Medium-sized debris becomes airborne, damaging other structures.
	F3	Roofs and some walls, especially unreinforced masonry, are torn form structures. Small ancillary buildings are often destroyed. Manufactured homes on nonpermanent foundations can be overturned. Some trees are uprooted.
Personal protection can only be achieved through use of a specially designed extreme wind refuge area, shelter, or safe room.	F4	Well-constructed homes, as well as manufactured homes, are destroyed, and some structures are lifted off their foundations. Automobile-sized debris is displaced and often tumbles. Trees are often uprooted and blown over.
	F5	Strong frame houses and engineered buildings are lifted from their foundations or are significantly damaged or destroyed. Automobile-sized debris is moved significant distances. Trees are uprooted and splintered.

Source: FEMA Publication 320

Natural Hazard: Severe Thunderstorm (Lightning and Hail)	
Definition	Thunderstorm: Weather systems accompanied by strong winds, lightning, heavy rain or hail, and possible tornadoes. The National Weather Service classifies a thunderstorm as severe if its winds reach or exceed 53 mph, it produces a tornado, or it drops surface hail of at least 0.75 inches in diameter.
Description	Thunderstorms affect relatively small areas compared to other atmospheric hazards such as hurricanes and winter storms. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. However, weather-monitoring reports indicate thunderstorm systems can travel intact for distances in excess of 600 miles. About 10 percent of the 100,000 thunderstorms that occur each year are classified as severe. Lightning occurs with all thunderstorms and can strike anywhere. Lightning is generated by the buildup of charged ions in a thundercloud. The discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures of over 50,000 degrees Fahrenheit. The rapid heating and cooling of the air near the channel causes a shock wave that produces thunder. In the U.S., an average of 93 people are killed and 300 injured each year by lightning. Most lightning casualties occur in the summer months during the afternoon and early evening. Hailstorms occur when updrafts (strong rising currents of air within a storm) carry water droplets to a height where freezing occurs. When the ice particles become too heavy to be supported by the updraft, they fall to the ground. The size of the hailstone depends on the severity and size of the storm. Hailstones may be as small as ¼ Inches in diameter and as large as golf balls. The larger the hailstone, the faster they fall to the earth. Large hailstones can fall at speeds over 100 mph. Hailstorms cause nearly $1 billion in property and crop damage annually. Long stemmed vegetation is particularly vulnerable to hail damage. Hailstorms can also cause considerable damage to buildings and automobiles, but rarely result in loss of life.
Historical Occurrence	4 Lightning events were reported in Beagle County between January 1950 and May 2002. One lightning event, with $1,000 in property damage was reported in Darwin. Lightning struck a tree near a house in Darwin. The lightning traveled through one of the roots of the tree and blew a whole in the driveway and curled up the metal trim on the garage. All of the brooms and tools within the garage were knocked onto the floor. In another event, reported by the Committee (but NOT reported in the NWS data) a Darwin woman was struck by lightning. The woman survived but suffered severe burns. 55 hail events were reported between January 1950 and May 2002. Four events were reported in Darwin. All reported events occurred in 2001. Reported damages ranged from $0 (0.75 inch diameter) to $25,000 (1.75 inch diameter).

Probability	On average, Beagle County experiences between 40 and 50 thunder events per year. A thunder event is composed of lightning and rainfall and can intensify into a severe thunderstorm with damaging hail, high winds, tornadoes, and flash flooding. The average number of hailstorm days per year 4-5. According to NOAA, an individual's chance of being struck by lightning are estimated to be in 600,000.
Vulnerability	Lightning presents the greatest immediate threat during a thunderstorm. People who are outdoors, especially under or near tall trees, in or on water, or on or near hilltops are most vulnerable. While lightning could occur anywhere within the community, the impact, damage would be confined to property that was struck and its occupants. The greatest damage from hail occurs to property, especially automobiles and mobile homes. People or animals unable to reach shelter may also be at risk. Hail events have the potential of impacting the entire community.
Maximum Threat	In Iowa, the average length of thunderstorms is between 60 and 70 minutes; however, severe thunderstorms are often faster moving and shorter in duration. The area impacted is usually between 5 and 15 minutes. The entire community is at risk. One cannot predict where lightning may strike and hailstorms move through the community.
Severity of Impact	In an average year, lightning kills more people in the U.S. than the number of persons killed from tornadoes, floods, and hurricanes combined. Lightning can also result in property damage and fires. The greatest threat from hail is property damage, particularly to cars and homes. Broken windows and roof damage are common during hailstorms. Typical hail damage does not threaten the structural integrity of buildings.
Speed of Onset	Advances in weather prediction and surveillance have increased warning times. The National Weather Service watches and warnings are broadcast over NOAA Weather Alert radios and local television and radio stations. Darwin has NOAA Weather Alert system coverage as well as warning sirens that cover the entire City. If residents understand and heed the National Weather Service warnings they usually have time to seek shelter and take appropriate action.

Natural Hazard: Winter Storm (Snow and Ice)	
Definition	Winter storms consist of extreme cold weather and heavy concentrations of snowfall or ice. There are three categories of winter storm: blizzard, heavy snowfall, and ice storms.
Description	Winter storms are most likely to occur between late October and late March. In the Midwestern and Great Plains states winter storms usually begin as mid-latitude depression weather systems originating in Canada and the Arctic. Blizzards, the most dangerous of winter storms, combine low temperatures, heavy snowfall, and high winds that blow the snow into drifts and reduce visibility. The National Weather Service describes a blizzard as large amounts of falling or blowing snow and winds of at least 35 miles per hour that are expected to last for several hours. A severe blizzard is characterized by considerable falling or blowing snow, winds of at least 45 miles per hour, and temperatures of 10 degrees Fahrenheit or lower lasting for several hours. A heavy snowstorm is one that drops four or more inches of snow in a 12-hour period or six or more inches in a 24-hour period. Often high winds accompany the storm, blowing the snow into drifts and causing poor visibility. Ice storms occur when a significant amount of moisture falls from clouds and freezes immediately upon impact. Ice storms make driving and even walking extremely hazardous.
Historical Occurrence	According to NOAA, Beagle County experienced 32 reported snow and ice events between January 1993 and April 30, 2002. These storms resulted in 6 deaths, total property damage of $58,856 million and total crop damage of $65 million.
Probability	Snow level measurements provide the probability and frequency of occurrence associated with severe winter storms. In Beagle County, snow depths with a 5% chance of being equaled or exceeded in any given year are between 50 and 75 cm (19.5- 29.25 inches).
Vulnerability	Large snowstorms, ice storms, and severe blizzards have a substantial impact on utilities and transportation systems and can result in loss of life due to accidents or hypothermia. People can become stranded at home, often without utilities or other services. The most vulnerable segments of the population are people in automobiles, people who work outdoors or whose work require them to travel, and people who are most susceptible to the dangers of extreme cold weather – the very young, the elderly, and those with health conditions such as heart and respiratory diseases. People living in poorly insulated homes are more susceptible. This includes homes built prior to 1970 that have not been retrofitted/weatherized.

	Heavy snowfall and blizzards can trap motorists in their cars. Ice storms result in particularly hazardous driving conditions. The leading cause of death is automobile accidents. Ice storms can also break power lines. Extreme cold weather may cause water mains to freeze. If the storm lasts more than one or two days, the possibility of utility failures and interruption of services increases greatly. Emergency services ability to respond quickly may also be impacted. Fire presents a great danger because water supplies may freeze and firefighting equipment may not be able to get to the fire.
Maximum Threat	Since winter storms are generally large, due to the compact size of Darwin, the entire community could be impacted.
Severity of Impact	The severity of the impact depends on the type of storm, the intensity of the storm, the duration of the storm, the community's ability to respond, and the degree the public understands and responds to weather advisories. Heavy ice and snow may disrupt power distribution. A very intense storms and/or storms lasting for more than one or two days may impact the utility company's ability to restore power and the City's ability to remove ice and/or snow from roads and highways. Power and transportation disruption could impact emergency services. In Darwin, the impact of winter storms has been limited to transportation problems or power failures. The impacts from major storms usually diminish within 2 to 3 days.
Speed of Onset	National Weather Service weather advisories (winter storm watch, winter storm warning, ice storm warning, heavy snow warning, blizzard warning, and travelers advisories) are widely distributed via the NOAA weather alert system and local radio and television. Winter storms are tracked several days in advance. As a result City and County emergency services staff and the general public are kept well informed and prepared for the event.

Natural Hazard: Drought	
Definition	Drought: A water shortage caused by a deficiency of rainfall.
Description	A drought occurs when there is a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. High temperatures, prolonged high winds, and low relative humidity can intensify the severity of a drought. Drought differs from other natural hazards in three ways: • A droughts onset and end are difficult to determine because the effects accumulate slowly and may linger after the apparent end of the event. • There is no precise and universally accepted definition. This causes confusion about whether a drought exists and, if it does, its severity. • The impacts of drought are less obvious and are spread over larger geographic area. These differences have hindered the development of accurate, reliable, and timely estimates of drought severity and effects. Thus making hazard analysis and risk assessment more difficult. Three types of drought relevant to Iowa are: • Meterologic drought, which is defined solely on the degree actual precipitation, differs from tile expected average or normal amount. • Hydrologic drought which is related to the effects of precipitation shortfalls on streamflows and reservoir, lake, and ground water levels. • Agricultural drought which is defined principally in terms of soil moisture deficiencies relative to water demands of crops.
Historical Occurrence	During the 20th Century two severe droughts impacted the Midwest (the 1930's Dust Bowl drought and the 1976-77 drought). Between January 1950 and August 2001, 4 drought events were reported for Beagle County. All events were reported after 1995. The August 1995 event resulted in reported crop damages of $109.9 million. The July 1999 event resulted in reported crop damages of $150.1 million. The August and September 2000 events resulted in a reported $161.0 million in crop damages.
Probability	The most reliable information available was historical. Historical occurrence indicates that the probability of a severe drought in as least one chance in 100 years. The likelihood of a less severe drought is much higher with four short-term events occurring in a 6-year period.
Vulnerability	A severe drought would impact the entire community. The agricultural sector would be most severely impacted. Agricultural production could be damaged by loss of crops or livestock. Increased demand for water and electricity could result in shortages and rationing. The number and severity of wild fires may also increase. A short-term drought could result in limiting water usage such as watering lawns. The community may also be exposed to greater risk from fire resulting in burning restrictions.

Maximum Threat	Severe droughts generally impact large geographical areas. Thus, a drought impacting Darwin would most likely impact much of Iowa.
Severity of Impact	Severe drought would have the greatest impact on agricultural crops, livestock, wildlife and streamflows. Although drought seldom results in the loss of life, a severe drought would have substantial economic impacts. In the mid-1970's drought, 40 separate drought relief programs administered by 16 Federal agencies provided nearly $8 billion in relief.
Speed of Onset	Droughts develop over wide geographical areas over extended period of time. During the past decade, research efforts, such as those at the University of Nebraska Drought Center, attempts to predict droughts and develop policy on preparedness, mitigation, and warnings have increased. However, this research is in its early stages and accurate, consistent drought warning/prediction methodology is not readily available.

Natural Hazard: Earthquake	
Definition	Earthquake: A wave like movement of the earth's surface that results from the sudden shifting of rock beneath the earth's crust.
Description	The earth's crust and upper part of the mantle are constantly pushing and moving against one another along what are known as fault lines. When rock masses slip along a fault, the energy of an earthquake is released in seismic waves. Earthquakes can also be produced by volcanic eruptions. The damage caused by an earthquake depends on its intensity. Today geologists use the Modified Mercalli (MM) intensity scale to measure the intensity of ground shaking at a particular site. The MM scale has 12 graduations. Quakes of intensity I-IV are minor and often not even noticed. By intensity V nearly everyone senses the movement, and earthquakes of intensities greater than VII are considered major.
Historical Occurrence	Iowa has experienced only minor earthquake activity since 1803. The New Madrid earthquakes of 1811-1812 were the first reported felt in Iowa. Since 1867, 12 earthquakes with epicenters in Iowa have occurred. None have been located in Beagle County. The last reported earthquake in Iowa occurred in Oxford on April 20, 1948.
Probability	Darwin is located in Seismic Zone 0, the lowest risk zone in the United States. It is unlikely an earthquake event would occur in Darwin.
Vulnerability	Although Darwin is in the lowest risk zone, this does not guarantee an earthquake would never impact the area. Current earthquake research indicates that if a significant earthquake occurred along the New Madrid fault, the impact on Beagle County would be less than a MMV.
Maximum Threat	Darwin would experience minor damage, if any. At MMV most people would feel the earthquake. Many would be awakened. Some dishes and windows may be broken and unstable objects could be overturned
Severity of Impact	There would be few, if any injuries and little or no property damage. Essential services would not experience interruption.
Speed of Onset	Currently there are no reliable warning systems.

Technological Hazard: Hazardous Materials	
Definition	Hazardous materials are substances or materials that, because of their chemical, physical, or biological nature, pose a potential risk to life, health, or property if they are released.
Description	Cities, counties, and towns where hazardous materials fabrication, processing, and storage sites are located and those where hazardous waste treatment storage or disposal facilities operate are at risk for HAZMAT incidents. The storage and use of hazardous materials does not occur only in and around chemical manufacturing plants. In addition, facilities such as service stations and hospitals store and use hazardous materials and many hazardous materials are located in homes In addition to large quantities of hazardous materials maintained in communities, hazardous materials are transported daily by air, water, road, rail, and pipeline. Of the 1.5 billion tons of materials transported each year, more than half move by trucks along the nation's highways. Of the 6,774 HAZMAT events that occur on average each year, 5,517 are highway events, 991 are railroad events, and 266 are due to other causes. Rains, high winds, and fires can worsen conditions surrounding HAZMAT events making it even more difficult to contain releases and deter the short and long term effects. Burning fuels or chemicals entering sewers or drains that are not completely filled with stormwater runoff have caused underground fires. Fires involving certain types of HAZMAT may generate more toxic gas or smoke than would otherwise normally evolve. The City is located 10 miles south of Interstate 80. State Highway 225 forms the northern boundary of the City.
Historical Occurrence	The Beagle County Emergency Management Risk Assessment dated December 2000, reported 12 major hazardous materials events and 3 injuries between 1985 and December 2000. The analysis estimated an average of 75-80 annual incidents. A tractor-trailer owned by Darwin Transport parked at the Darwin Coop Exchange anhydrous plan storage facility was damaged (split tank). Anhydrous ammonia was released and the downtown area evacuated.
Probability	The Planning Committee felt that based on past history, it is highly likely (nearly 100%) that a hazardous materials incident may occur in any given year.
Vulnerability	People living in close proximity to transportation routes or fixed facilities classified as 302 facilities would be most vulnerable to injury from a HAZMAT event. There are 12 EPA reporting facilities in Darwin. In addition, several trucking firms are located near the community. The Committee felt the greatest threat is from an

	anhydrous plant storage facility located in the center of town. Trailers are loaded at this area and frequently are parked in the area over night. The Committee estimates that up to 50% of the population could be impacted by an event. (See Appendix H for location map)
Maximum Threat	The Beagle County Local Emergency Planning Committee (LEPC) has an in-depth hazard analysis identifying HAZMAT facilities, their locations, and the stored chemicals. The analysis indicates there is a moderate risk of release of hazardous materials that would not impact more than a ¼ mile radius. The Committee estimated that 30% of the Community is within ¼ mille of HAZMAT facilities. The number of people impacted would be greater during the day when businesses are open.
Severity of Impact	A well-trained, well-equipped response team in close proximity to the location of an incident substantially reduces the severity of the impact. The Fire Department employees are trained in HAZMAT response. City trained response personnel are on-call 7 days a week, 24 hours a day. In addition, The Beagle County Hazardous Materials Response Team is located in Newton, Iowa. The team provides 7 day a week, 24 hour a day response capabilities. The estimated response time is .5 to 1 hour. Immediate dangers from HAZMAT include fires, explosion, and the possible contamination of the community's air, land, and water. Direct contact with skin may cause painful and damaging burns. Contamination of air, ground, or water may harm fish, wildlife, livestock, and crops.
Speed of Onset	It is impossible to predict when a HAZMAT incident may occur.

Hazard Analysis and Risk Assessment Summary

Hazard Ranking

After completing the hazard analysis, the Planning Committee assigned ratings to each hazard. Following is a list of the hazards, their ratings, and the Committee's ranking.

1. Snow and Ice 38
2. Extreme Wind 37
3. Tornado 36
4. Hazardous Materials 33
5. Thunderstorm-Hail 32
6. Thunderstorm-Lightning 24
7. Drought 22
8. Flood 11
9. Earthquake 14

After discussing the criteria and the threat to the City, the Committee ranked flood higher than earthquake. The Committee noted the earthquake rating of 14 was a result of the speed of onset and that the community was more vulnerable to the impacts of occasional flash flooding.

Ratings by Criteria

	Snow-Ice	Tornado	Wind	HAZMAT	Tstorm Hail	Tstorm Lightning	Drought	Earth-Quake	Flood
Historical	8	1	2	3	3	1	1	1	3
Probability	8	6	7	7	7	6	5	1	3
Vulnerability	7	7	8	7	6	3	6	1	1
Max Threat	7	6	8	5	7	4	6	1	1
Severity	3	8	5	3	4	5	3	1	1
Onset	5	8	7	8	5	5	1	9	2
TOTAL	38	36	37	33	32	24	22	14	11

Asset Inventory

The City is currently in the process of conducting an inventory of community assets. Following is a summary of the City's preliminary inventory.

Hazards: Snow/Ice, Tornado, Wind, Thunderstorm (Hail, Lightning). Entire Community is “Hazard Area”

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in Hazard Area	% in Hazard Area	$ in City	$ in Hazard Area	% in Hazard Area	# in City	# in Hazard Area	% in Hazard Area
Residential	362	362	100	34,956,475	34,956,465	100	904	904	100
Commercial	60	60	100%						
Industrial	0	0	0	0	0	0	0	0	0
Agriculture	0	0	0	0	0	0	0	0	0
Religious/ Non-Profit	3	3	100						
Government	3	3	100	1,000,000	1,000,000	1,000,000			
Education	2	2	100				764	764	764
Utilities	3	3	3						

Residential/Commercial Value = Assessed value
Government = Community Center (7,200 sq ft), fire station, maintenance building
Education = Staff and students at public school grades kindergarten – 12 and private school grades 1-8
Utilities = Wastewater treatment plant, water plant and city wells

Other hazards:

HAZMAT: Risk area = structures and people within ¼ mile (3-4 blocks) of facilities. See Map in Appendix H.

Riverine flooding: No flood hazard area

Flash flooding: Low lying areas, scattered throughout community

See hazard tables for estimate of the % of People and Property and % (spatial area) of City at risk in an event. The Committee referred to the Fujita-Pearson Scale to estimate risk. For example, the entire community is a tornado risk area; however, a F-2 event has an estimated width of 56 -- 175 yards (1 mile = 1,760 years).

APPENDIX B

FLOOD OVERVIEW

TABLE OF CONTENTS

FLOODING

Of all the natural hazards that occur in the U.S., flooding occurs most often; at least 90% of disasters in the U.S. are floods. In Iowa, it is estimated that flooding causes annual damages exceeding $534 million. The National Flood Insurance Program (NFIP) defines flooding as:

> A partial or complete inundation of normally dry land areas from:
> 1. The overland flood of a lake, river, stream, ditch, etc.
> 2. The unusual and rapid accumulation or runoff of stream waters.
> 3. Mudflows or the sudden collapse of shoreline land.

Riverine flooding is usually the result of heavy or prolonged rainfall or snowmelt occurring in upstream inland watersheds. Melting snow can combine with rain in the winter and early spring; severe thunderstorms can bring heavy rain in the spring or summer. Intense rainfall over a short period of time, or an ice or debris jam can also cause a river or stream to overflow. Riverine floodwaters can occur quickly and move rapidly, as in a flash flood, or waters can rise slowly over a period of hours or even a few days as they often do where the land is gently sloping or flat.

Flooding can also be caused by inadequate or improper drainage systems including storm sewers, culverts, and drainage ditches. These systems are usually designed to carry up to a specific amount of water (design capacity). When heavy rainfall causes the design capacity of the systems to be exceeded, water will begin to back up and fill low-lying areas near system inlets and along open ditches. This is most common in urban areas. As land is converted from fields or woodlands to roads and parking lots, it looses its ability to absorb rainfall. Urbanization increases runoff two to six times over what would occur on natural terrain.

The extent of damage caused by floods is determined by many factors including depth, frequency, velocity, rate of rise, duration and the potential presence of ice and debris. These factors also determine which mitigation methods will work best.

Depth is the primary factor in evaluating the potential for flood damage. Every floodplain is unique in terms of the different levels of flooding that can be expected.

- Very shallow flooding, usually defined as a depth of one foot or less, is not life threatening, but can still cause considerable amounts of damage to a building.
- Shallow flooding of one to three feet in depth can result in significant amounts of damage both to structures and their contents.
- Moderate flooding, depths of three to six feet, can destroy buildings and threaten lives because of the large flood forces involved.
- Deep flooding, depths exceeding six feet, are the most destructive and dangerous.

Frequency, or how often the flooding occurs, is usually the second factor considered. All floodplains are subject to floods of differing depths, with the lower depths occurring more often, or frequently, than higher levels. Although historical flood depths provide some indication of the level of risk, there is no certain method to predict future flood levels.

A method of estimating flood frequencies has been developed to determine the statistical probability of specific flood levels. For example, the flood that has a 1-percent (1 in 100) probability of being equaled or exceeded in any year is referred to as the 100-year flood event. However, this does not mean that a 100-year event is one that happens every 100 years or that once a 100-year event happens it will not occur again for another 100 years. This is only a statistical tool used to estimate the risk of certain flood levels.

The 100-year flood is known as the base flood elevation or BFE. Once a BFE has been established, it is published on a Flood Insurance Rate Map (FIRM). These maps delineate areas of a specific community that are subject to the base flood.

Velocity is the speed at which floodwaters move.

- Slow moving floodwaters are usually defined as those having a velocity of less than three feet per second and they usually do not present substantial problems.
- Faster moving floodwaters, those moving over five feet per second, can quickly erode or scour the soil leading to foundation failure or even moving the house off its foundation.

Historical information from past flood events is often the best source of determining potential flood velocities even though it is possible to hydraulically calculate theoretical velocities.

The speed floodwaters rise, or **Rate of Rise,** is the primary factor in determining the amount of warning time. In steep topography or when large amounts of rainfall occur within a short period of time, flash floods can occur. In low, flat areas the warning time can be several hours or even days.

The rate of rise is also important because of the effects of hydrostatic pressure. For example, if the water rises quickly, water may not be able to flow into the building fast enough for the pressure inside to rise as quickly as the level outside. When the internal and external pressures (pressure of the water inside the building and the water outside the building) are significantly different, it could cause serious structural damage and even collapse.

The **duration** of the flood is how long it lasts. Often duration is related to rate of rise and rate of fall. Usually water that rises and falls rapidly will recede more rapidly and water that rises and falls slowly will recede more slowly. How long the structural members, interior finishes, service equipment, and building contents are affected by floodwaters is related to how much damage will occur. Duration also determines how long buildings remain uninhabitable.

Ice and/or debris can often pose a greater danger than the floodwater itself. For example ice floes, caused by ice breakup, can often strike a building causing serious damage or the ice may form around a flooded building causing uplift and structural damage. Floodwaters can carry all types of debris, including trees, portions of flood damaged buildings, storage tanks, mobile homes, as well as dirt and other substances such as oil, gasoline, sewage and chemicals. At low velocities the debris can cause damage and pose a health and safety threat, at higher velocities it can destroy structures, including buildings and bridges.

47 FLOOD EVENT(S) WERE REPORTED IN **Beagle County, Iowa** between **01/01/1950** and **06/30/2002.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 IAZ026>030 - 035>042 - 045>054 - 056>064 - 070>079 - 080>099 -	03/02/1993	1200	Flooding	N/A	0	0	50K	0
2 IAZ002>011 - 013>054 - 056>064 - 070>074 - 080>084 - 090>096	05/07/1993	1800	Flood	N/A	0	0	5.0M	5.0M
3 BEAGLE	08/11/1993	1900	Flash Flood	N/A	0	0	50K	50K
4 IAZ005>011 - 024>030 - 036>042 - 049>054 - 061>064 - 075>078 - 086>089 - 098 - 099 -	08/14/1993	2400	Flood	N/A	0	0	5.0M	5.0M
5 IAZ002>005 - 013>015 - 022>026 - 033>037 - 045>050 - 058>064 - 071>078 - 083 - 088 - 095>099	08/16/1993	0600	Flood	N/A	0	0	5.0M	5.0M
6 IAZ002>011 - 013>054 - 056>064 - 070>078 - 080>099	08/29/1993	0300	Flood	N/A	0	0	5.0M	5.0M
7 All Of Iowa	09/01/1993	0000	Flood	N/A	0	0	500K	500K
8 IAZ034>040 - 046>052 - 058>064 - 072>078 - 083>089 - 095>099	09/14/1993	0600	Flood	N/A	0	0	500K	500K
9 IAZ028>030 - 040>054 - 056>064 - 070>078 - 080>099	09/25/1993	1400	Flood	N/A	0	0	5.0M	5.0M
10 Central And	10/01/1993	0000	Flooding	N/A	0	0	50K	50K
11 Central Iowa	10/09/1993	0600	Flooding	N/A	0	0	5K	5K
12 Much Of Iowa	02/19/1994	0600	Flooding	N/A	0	0	500K	0
13 IAZ001>099	06/22/1994	2330	Flooding	N/A	0	0	500K	500K
14 IAZ004>006 - 015 - 048>050 - 061>064 - 074>078 - 082>089 - 094>099	04/10/1995	0900	Flooding	N/A	0	0	10K	0
15 IAZ004>006 - 015 - 035>037 - 048>052 - 061>064 - 074>078 - 085>089 - 097>099	04/26/1995	1500	Flooding	N/A	0	0	25K	0
16 IAZ033 - 006 - 045>052 - 057>068 - 070>078 - 081>089 - 092>099	05/07/1995	1200	Flooding	N/A	0	0	200K	10K
17 IAZ004>011 - 015>019 - 023>030 - 035>042 - 047>054 - 060>068 - 074>078 - 084>089 - 095>099	06/06/1995	2300	Flood	N/A	0	0	50K	100K

18 IAZ046>050 - 059>062 - 074>075	02/09/1996	06:00 AM	Flood	N/A	0	0	50K	0
19 IAZ060>062 - 072>075 - 081>086 - 092>097	05/19/1996	06:00 AM	Flood	N/A	0	0	100K	50K
20 Newton	05/09/1996	09:00 PM	Urban/sml Stream Fld	N/A	0	0	50K	0
21 IAZ057>062 - 070>075 - 081>086 - 092>097	05/23/1996	03:00 PM	Flood	N/A	0	0	250K	75K
22 IAZ057>062 - 070>075 - 081>086 - 092>097	05/26/1996	12:00 PM	Flood	N/A	0	0	400K	100K
23 IAZ029 - 033>039 - 045>050 - 058>062 - 074>075	06/17/1996	03:00 AM	Flood	N/A	0	0	500K	1.0M
24 IAZ036 - 047>048 - 061 - 075	06/17/1996	04:00 AM	Flood	N/A	0	0	1.0M	500K
25 IAZ034>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	02/18/1997	06:00 PM	Flood	N/A	0	0	750K	0
26 IAZ024>028 - 035>039 - 048>049 - 061 - 075	06/21/1997	03:00 PM	Flood	N/A	0	0	60K	100K
27 IAZ061 - 074>075 - 083>084 - 095>096	05/07/1998	01:00 AM	Flood	N/A	0	0	175K	70K
28 Colfax	05/19/1998	05:15 PM	Urban/sml Stream Fld	N/A	0	0	30K	2K
29 IAZ061 - 074>075 - 083>084	05/24/1998	06:00 AM	Flood	N/A	0	0	125K	50K
30 IAZ027 - 037 - 049>050 - 059>061 - 074>075	06/08/1998	06:00 PM	Flood	N/A	0	0	450K	90K
31 Newton	06/14/1998	04:00 PM	Urban/sml Stream Fld	N/A	0	0	50K	30K
32 IAZ034 - 037 - 045>046 - 048>050 - 057>061 - 070 - 074>075 - 083>084	06/14/1998	09:00 AM	Flood	N/A	0	0	5.4M	655K
33 IAZ023>024 - 027 - 035 - 037 - 047>050 - 059>061 - 072>075	06/18/1998	02:00 AM	Flood	N/A	0	0	8.7M	460K
34 IAZ016>017 - 027 - 037 - 049>050 - 061 - 074>075	06/21/1998	06:00 AM	Flood	N/A	0	0	900K	180K
35 Newton	06/29/1998	01:00 PM	Urban/sml Stream Fld	N/A	0	0	50K	10K
36 IAZ034 - 037>038 - 045>046 - 049 - 058>062 - 073>075 084>086 - 095	07/06/1998	03:00 AM	Flood	N/A	0	0	900K	1.8M
37 Galesburg	02/26/1999	10:45 PM	Urban/sml Stream Fld	N/A	0	0	1K	0
38 IAZ004>006 - 016 - 023 - 025>027 - 033>037 - 071>073 - 048>049 - 058>061 - 071>073 - 075 - 083>086 - 095	04/06/1999	06:00 PM	Flood	N/A	0	0	210K	0

39 IAZ004>007 - 015>017 - 023>027 - 033>037 - 045>046 - 048>049 - 058>061 - 071>072 - 075 - 083>086 - 095	04/22/1999	06:00 AM	Flood	N/A	0	0	370K	0
40 IAZ004>006 - 016>017 - 023>028 - 035>039 - 045>046 - 048>049 - 058>061 - 072>075 - 083>085 - 095	05/16/1999	09:00 PM	Flood	N/A	0	0	7.6M	875K
41 IAZ004>006 - 016>017 - 023>028 - 035 - 037>039 - 045>046 - 048>049 - 058>061 - 071>075	05/21/1999	03:00 PM	Flood	N/A	0	0	1.4M	280K
42 IAZ004>007 - 016>017 - 023>028 - 033>039 - 045>049 - 057>062 - 074>075 - 083>084 - 094>095	06/09/1999	06:00 AM	Flood	N/A	0	0	1.8M	2.7M
43 IAZ026>027 - 038 - 061 - 074>075 - 083>086 - 094>095 - 097	06/24/2000	03:00 AM	Flood	N/A	0	0	650K	975K
44 IAZ046>050 - 057>062 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	03/15/2001	03:00 PM	Flood	N/A	0	0	260K	0
45 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	03/23/2001	06:00 PM	Flood	N/A	0	0	383K	0
46 IAZ004>007 - 015>017 - 023>026 - 033>038 - 045>046 - 048>049 - 059>061 - 073>075 - 083>086 - 094>095	06/12/2001	03:00 PM	Flood	N/A	0	0	825K	1.7M
47 IAZ061>062 - 074>075	06/13/2002	04:00 PM	Flood	N/A	0	0	40K	80K
				TOTALS:	0	0	60.819M	33.947M

Floodplain Management in Iowa

As part of an effort to stem the increase in flood damages sustained after a number of devastating flood events in the 1940's, the Iowa General Assembly created the Iowa Natural Resources Council in 1949. Originally, the Council's power over floodplain activities was advisory in nature. Its regulatory functions were established by 1957 and 1965 amendments. After a number of state reorganizations, Iowa's floodplain regulatory authority now resides with the Water Resource Section of the Iowa Department of Natural Resources (IDNR).

Iowa's floodplain program is different from most states in that its authority extends to virtually all floodplain construction within the state and is not limited to FEMA regulatory floodplains. Regulatory thresholds of rural development in watersheds draining ten square miles or more, and urban developments in watersheds draining two square miles or more require a permit from the IDNR. Other developments below these thresholds have relatively minor impacts and are not considered.

Iowa law allows IDNR to delegate State’s floodplain regulatory functions to a local government that has a flood study identifying the regulatory floodway and floodway fringe along the 100-year flood profile and a floodplain management ordinance meeting certain minimum requirements. The State allows communities with delegated floodplain management authority to issue floodplain development permits in lieu of the IDNR. The State has delegated floodplain authority to approximately 135 NFIP participating communities. As part of the delegation process, the State retains the right to concur or deny with the granting of any variance from the community’s floodplain management regulations.

Although the State of Iowa's criteria for new floodplain development is similar to the minimum NFIP criteria in most respects, there are some important differences, for example:

- The lowest floor of new structures must be elevated an additional 1.0 foot above the 100-year (base) flood.
- Iowa does not allow new residential structures in the floodway.
- Residential structures must have wheeled vehicular access during the 100-year flood.
- The substantial improvement threshold is reached with an additional 25% or more of flood area.
- All post-Firm (Flood Insurance Rage Map) additions are considered cumulative improvements in the determination of increase in flood area.

(Source: FEMA Region VII and IDNR)

Beagle County Floodplains

The Beagle County Flood Insurance Rate Maps (FIRM) contains four panels (see following page). FEMA has not identified Special Flood Hazard Areas (SFHA) in the portion of the County NOT included within these four panels. Thus, substantial portions of Beagle County, including unincorporated areas along the North Skunk River, are classified as No Special Flood Hazard Areas (NSFHA). Floods of greater than the 100-year flood, flooding caused by local drainage problems, and flash flooding may damage structures in these areas.

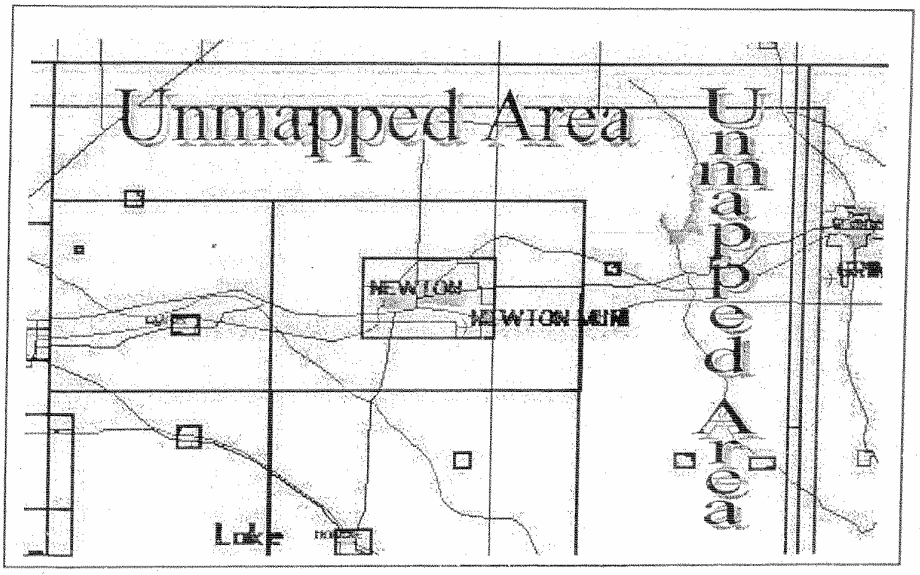
There are five mapped communities in Beagle County: Colfax, Kellogg, Newton, Reasnor, and Mingo. Colfax, Kellogg, Newton, and Reasnor participate in the National Flood Insurance Program. Mingo does not participate. Flood insurance is not available and no direct Federal assistance can be legally provided for the acquisition or construction of buildings in non-participating communities.

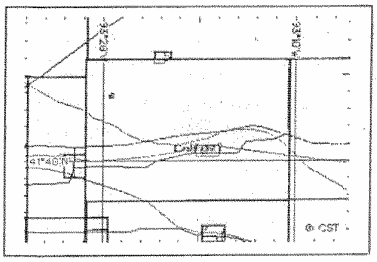
The National Flood Insurance Program (NFIP) classifies Beagle County and all mapped communities within the County as "minimally flood-prone" areas. In these areas, the Flood Hazard Boundary Map was converted to Flood Insurance Rate Map by letter, no change in flooding is shown on the map, and no elevations are shown on the map.

Construction within the state and is not limited to FEMA regulatory floodplains. Regulatory thresholds of rural development in watersheds draining ten square miles or more, and urban developments in watersheds draining two square miles or more require a permit from the Iowa Department of Natural Resources (IDNR). (Refer to "Floodplain Management in Iowa" for more information.)

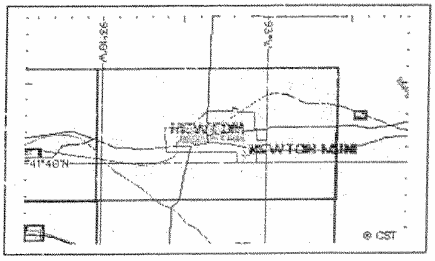
(Source: National Flood Insurance program Community Status Booklet, State of Iowa)

BEAGLE COUNTY FLOODPLAIN MAP PANELS

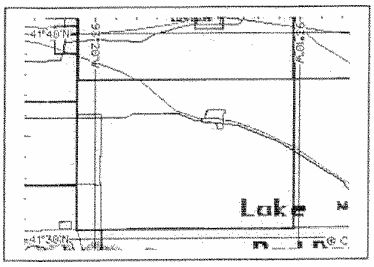




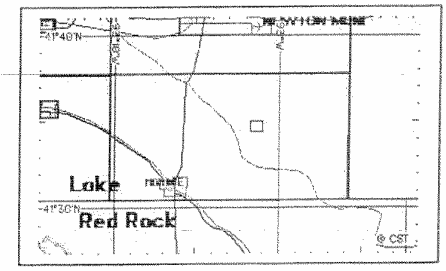
Community: 190880
Panel: 0001 Surrounding Colfax
Date: 01/01/1987



Community: 190880
Panel: 0002 Surrounding Newton
Date: 01/01/1987



Community: 190880
Panel: 0003 Surrounding Prairie City
Date: 01/01/1987



Community: 190880
Panel: 0004 Surrounding Monroe and Reasnor
Date: 01/01/1987

APPENDIX C

TORNADO-EXTREME WINDS

TABLE OF CONTENTS

Tornadoes

Each year approximately 1,000 tornadoes are spawned by severe thunderstorms. Although most tornadoes remain aloft, those that touch ground are forces of destruction. Tornadoes have been known to lift and move huge objects, destroy or move whole buildings long distances, and siphon large volumes from bodies of water. Tornadoes generate a tremendous amount of debris, which often becomes airborne shrapnel that causes additional damage. Tornadoes are almost always accompanied by heavy precipitation. Over the past 20 years, 106 Federal disaster declarations included damage associated with tornadoes.

Tornadoes follow the path of least resistance. People living in valleys have the greatest exposure. People living in manufactured or mobile homes are most exposed to damage from tornadoes. Even if anchored, mobile homes do not withstand high wind speeds as well as some permanent, site-built structures.

Mitigation Measures

- Attention to the type of structure used in tornado-prone areas, particularly avoiding highly susceptible manufactured or mobile homes.
- Quality construction and reinforcement of walls, floors, and ceilings provides, the greatest protection.
  - Proper anchoring of walls to foundations and roofs to walls
  - Code adoption, compliance, and inspection of new homes
- Seeking shelter in basements, small interior rooms, or hallways and avoiding rooms with large roof spans.
- Constructing reinforced, in-residence tornado shelter.
- Constructing community shelters; mobile home part shelters.
- Equipping gathering places with weather radios with an audible alert.
- Testing response and preparedness plans.
- Making special efforts to inform mobile home residents about the impacts of tornadoes and locations of safe shelters.

Extreme Winds

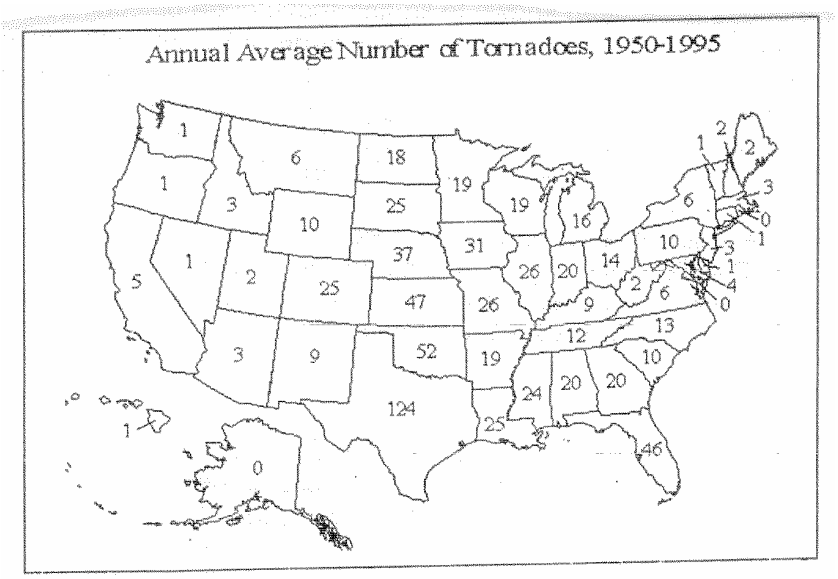
Extreme winds other than tornados are experienced in all regions of the United States. It is difficult to separate the various wind components that cause damage from other wind-related natural events that often occur with or generate windstorms. The three primary sources of extreme winds are hurricanes and tropical storms, severe thunderstorms, and winter storms. Windstorms and wind-related events caused 63 fatalities in 1993. Over the past 20 years, 193 Federal disaster declarations involved wind-induced damage.

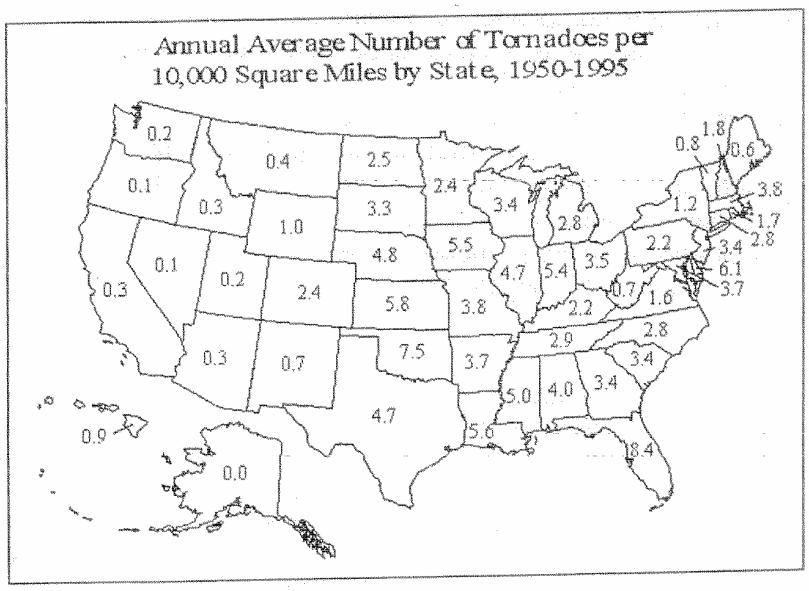
Mitigation Measures

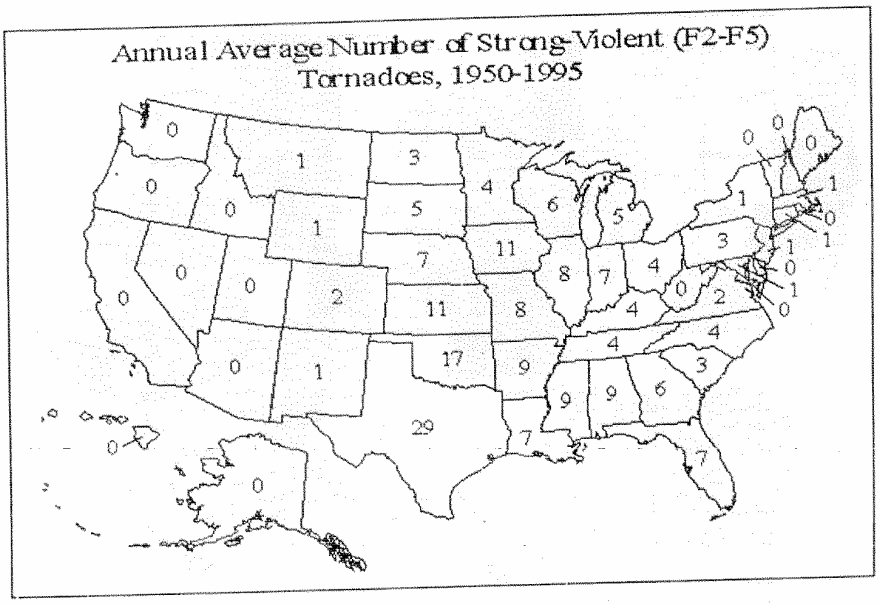
- Similar to tornado mitigation. Quality construction and reinforcement of walls, floors, and ceilings provide the greatest protection (See above).
- See wind mitigation checklist.

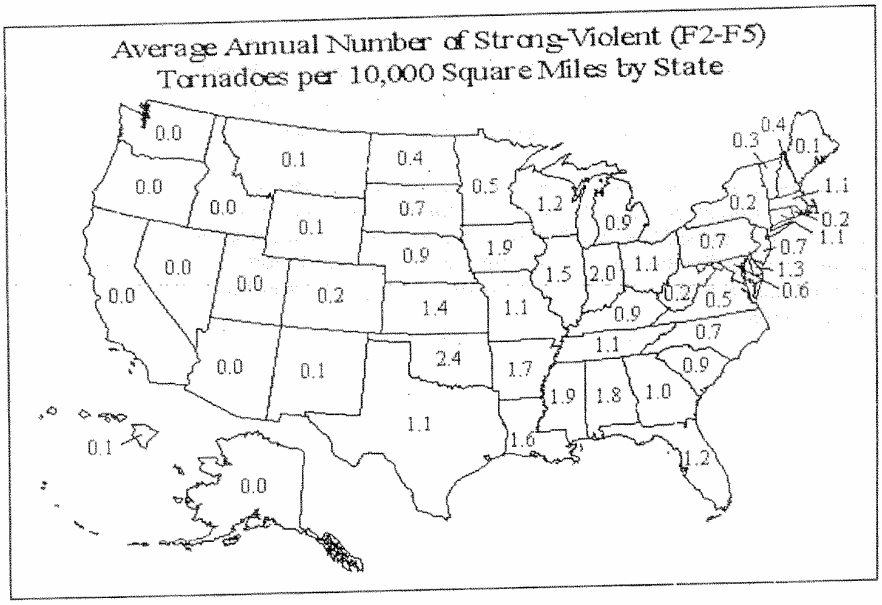
Iowa Tornadoes

In Iowa, most tornadoes occur in the spring and summer months in the late afternoon to evening hours, but they can occur in every month of the year and at any time of the day. Between 1950 and 1995, Iowa average 31 tornadoes per year. Of these approximately 11 are rated as "strong-violent" (F2 or higher on the Fujita Scale). The following maps summarize tornado activity in Iowa between 1950 and 1995.

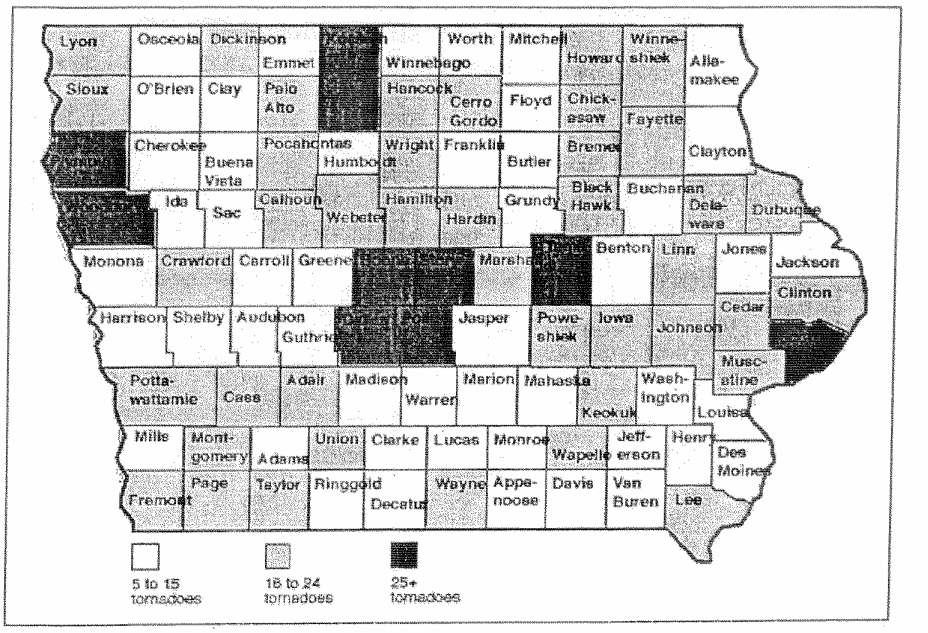





Annual Average Number of Strong-Violent (F2-F5)
Tornadoes, 1950-1995
0
0
1
3
4
6
5
0
0
0
1
0
1
1
0
1
5
11
7
8
7
4
3
1
0
1
0
0
0
2
11
8
4
0
2
0
4
4
0
1
17
9
9
9
6
3
29
7
7
0
0


Average Annual Number of Strong-Violent (F2-F5)
Tornadoes per 10,000 Square Miles by State
0.0
0.1
0.4
0.5
1.2
0.9
0.3
0.4
0.1
1.1
0.0
0.0
0.1
0.7
1.9
1.5
2.0
1.1
0.7
0.2
0.7
1.3
0.2
1.1
0.6
0.0
0.0
0.0
0.2
1.4
1.1
0.9
0.2
0.5
0.0
0.1
2.4
1.7
1.1
0.7
0.9
1.9
1.8
1.0
1.1
1.6
1.2
0.1
0.0

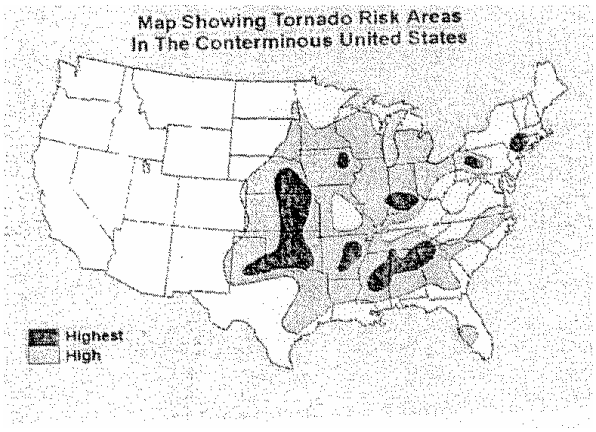
Number of tornadoes reported in Iowa's 99 counties from 1950 through 1995.



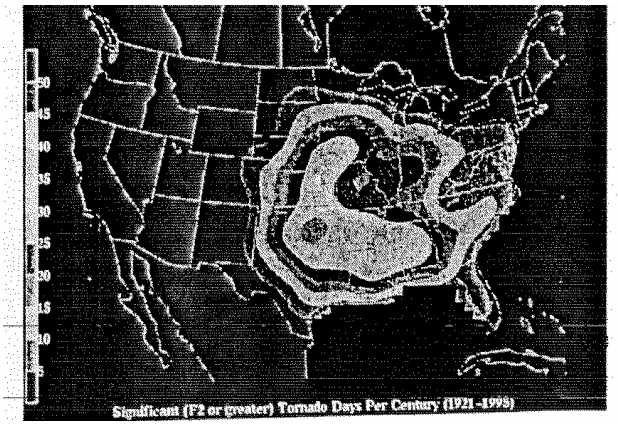
Highest counties: Story and Scott (35 tornadoes)
Lowest county: Allamakee (6 tornadoes)
Statewide average: 16.2 tornadoes

NOTE: Harry Hillaker, the state's climatologist, said the counties that are more populated are more likely to spot tornadoes and have tornado damage. Hillaker said there were fewer tornadoes reported in the 1950s and 1960s because multiple tornadoes in different parts of the state were often counted as one storm. Theoretically, Hillaker said, southwest Iowa should be the most prone to tornadoes because it's closest to Oklahoma and Kansas, states that are in "Tornado Alley," where heat and humidity generate the nation's highest number of tornadoes.

TORNADO RISK MAPS

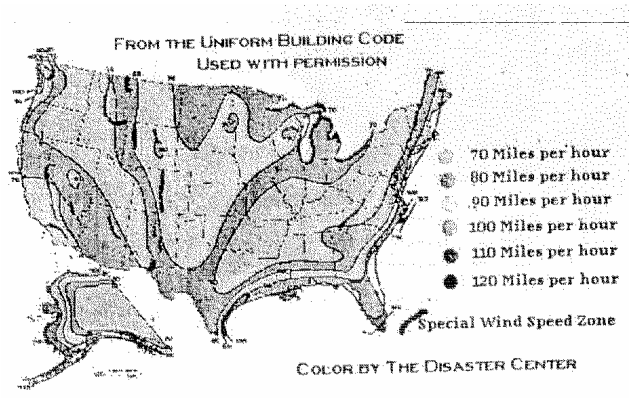


Source: fema.gov



Source: NOAA

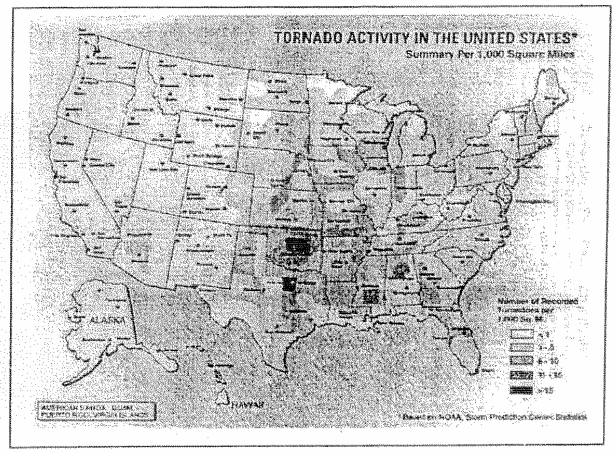
EXTREME WIND RISK MAPS



Source: fema.gov

Source: NOAA

Tornado Activity



Wind Zones

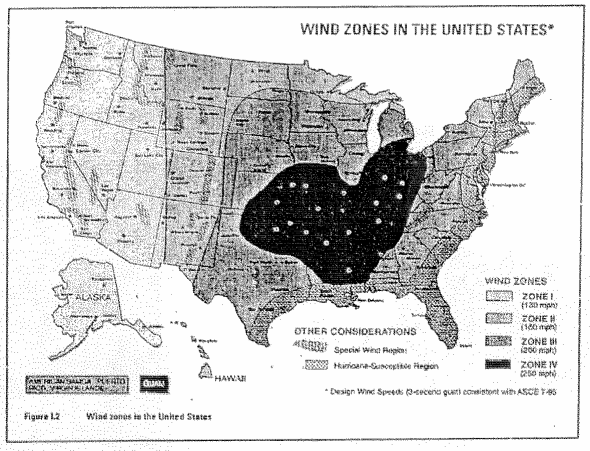


Figure I.2 Wind zones in the United States

Risk Table

NUMBER OF TORNADOES PER 1,000 SQUARE MILES (See Figure I.1)	WIND ZONE (See Figure I.2) I	II	III	IV
<1	LOW RISK	LOW RISK ★	LOW RISK ★	MODERATE RISK
1 - 5	LOW RISK	MODERATE RISK ★	HIGH RISK	HIGH RISK
6 - 10	LOW RISK	MODERATE RISK ★	HIGH RISK	HIGH RISK
11 - 15	HIGH RISK	HIGH RISK	HIGH RISK	HIGH RISK
>15	HIGH RISK	HIGH RISK	HIGH RISK	HIGH RISK

LOW RISK — Need for high-wind shelter is a matter of homeowner preference

MODERATE RISK — Shelter should be considered for protection from high winds

HIGH RISK — Shelter is preferred method of protection from high winds

★ Shelter is preferred method of protection from high winds if house is in hurricane-susceptible region

FUJITA-PEARSON SCALE

The original wind damage scale developed by T. Theodore Fujita, which bares his name, had two additional sections added to further categorize tornadoes by the lengths and widths of their damage paths. Both ratings were the products of researcher Allen Pearson, director of the National Weather Service's National Severe Storms Forecast Center, in 1971. The P - for Pearson - scale was accepted for use by NSSFC in 1973, creating the Fujita-Pearson Scale, or "FPP" Scale, which is still mentioned in some literature. In practice, the Pearson Scales are not as widely used today.

For an example of the Fujita-Pearson scale, Tom Grazulis writes in his book *Significant Tornadoes:* 1680-1991 that "the Sardorus, Ill;, tornado of March 20, 1976 leveled homes, had a path length or 63 miles, and had a path width of 800 yards (2,400 feet, or just under a half mile)." Using the Table below, the tornado's rating was F ,P ,P 4,4,4: a Fujita Intensity Scale rating of F-4, a Pearson Path Length Scale rating of P-4, and a Pearson Path Width Scale rating of P-4.

Scale	Fujita Wind Speed	Pearson Path Length	Pearson Path Width
---	0 – 40 mph	Less than 0.3 miles	Less than 6 yards
0	40 – 72 mph	0.3 – 0.9 miles	6 – 17 yards
1	73 – 112 mph	1.0 – 3.1 miles	18 – 55 yards
2	113 – 157 mph	3.2 – 9.9 miles	56 – 175 yards
3	158 – 206 mph	10 – 31 miles	176 – 566 yards
4	207 – 260 mph	32 – 99 miles	0.3 – 0.9 miles
5	261 – 318 mph	100 – 315 miles	1.0 – 3.1 miles

Source: Significant Tornadoes: 1680

17 TORNADO(s) were reported in **Beagle County, Iowa** between **01/01/1950** and **10/31/2002.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Iowa

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 BEAGLE	08/26/1965	1858	Tornado	F2	0	0	25K	0
2 BEAGLE	10/14/1966	1432	Tornado	F3	0	0	25K	0
3 BEAGLE	03/30/1968	1900	Tornado	F0	0	0	3K	0
4 BEAGLE	04/03/1968	1600	Tornado	F2	0	0	25K	0
5 BEAGLE	06/04/1973	1435	Tornado	F2	0	0	250K	0
6 BEAGLE	09/16/1978	1935	Tornado	F3	2	2	250K	0
7 BEAGLE	08/19/1979	2032	Tornado	F0	0	0	0K	0
8 BEAGLE	08/26/1979	1730	Tornado	F1	0	0	25K	0
9 BEAGLE	05/08/1986	1600	Tornado	F1	0	0	25K	0
10 BEAGLE	09/28/1986	1648	Tornado	F4	0	0	2.5M	0
11 BEAGLE	05/08/1988	1104	Tornado	F1	0	0	250K	0
12 BEAGLE	06/13/1990	2333	Tornado	F0	0	0	3K	0
13 BEAGLE	06/16/1990	0607	Tornado	F0	0	0	3K	0
14 Baxter	05/12/1997	04:48 PM	Tornado	F0	0	0	0	0
15 Kellogg	07/09/1998	05:05 PM	Tornado	F0	0	0	0	1K
16 Prairie City	04/08/1999	04:46 PM	Tornado	F2	0	1	1.0M	0
17 Colfax	04/11/2001	02:40 PM	Tornado	F1	0	0	10K	0
				TOTALS:	2	3	4.393M	500

Knots to Miles Per Hour Conversion Chart

Surface Weather Observations – METAR always have wind speeds recorded in knots. The conversion below will provide a quick conversion for winds from calm to 99 knots. The converted values are all rounded to the nearest integer. For a more accurate conversion use the following formula:

1 KNOT = 1.5155 MILES PER HOUR

KTS	0	1	2	3	4	5	6	7	8	9
	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
0	0	1	2	3	5	6	7	8	9	10
10	12	13	14	15	16	17	18	20	21	22
20	23	24	25	26	28	29	30	31	32	33
30	35	36	37	38	39	40	41	42	44	45
40	46	47	48	49	51	52	53	54	55	56
50	58	59	60	61	62	63	64	66	67	68
60	69	70	71	72	74	75	76	77	78	79
70	81	82	83	84	85	86	87	89	90	91
80	92	93	94	96	97	98	99	100	101	102
90	104	105	106	107	108	109	110	112	113	114

Land Beaufort Scale

The Beaufort Scale was originally developed in 1805 by Sir Francis Beaufort as a system for estimating wind strength without the use of instruments. It is currently stilli n use for this same purpose as well as to tie together various components of weather (wind strength, sea-state, observable effects) into a unified picture.

Force	Speed		Land Conditions
	knots	mph	
0	<1	<1	Calm, smoke rises vertically
1	1-3	1-3	Light air, direction of wind shown by smoke drift only
2	4-6	4-7	Light breeze, wind felt on face, leaves rustle, vanes moved by wind
3	7-10	8-12	Gentle breeze, leaves and small twigs in constant motion, wind extends light flag
4	11-16	13-18	Moderate breeze, raises dust, loose paper, small branches move
5	17-21	19-24	Fresh breeze, small trees in leaf begin to sway
6	22-27	25-31	Strong breeze, large branches in motion, umbrellas used with difficulty
7	28-33	32-38	Near gale, whole trees in motion, inconvenience felt walking against the wind
8	34-40	39-46	Gale, breaks twings off trees, impedes progress
9	41-47	47-54	Strong gale, slight structural damage occurs
10	48-55	55-63	Storm, trees uprooted, considerable damage occurs
11	56-63	64-73	Violent storm, widespread damage
12	64+	74+	Hurricane, extreme destruction

86 THUNDERSTORM & HIGH WIND event(s) were reported in **Beagle County, Iowa** between **01/01/1950** and **06/30/2002.**

*Click on **Location or County** to display Details.*

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Iowa								
Location or County	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
1 BEAGLE	07/08/1955	1100	Tstm Wind	0 kts.	0	0	0	0
2 BEAGLE	05/31/1958	1345	Tstm Wind	0 kts.	0	0	0	0
3 BEAGLE	09/26/1959	1000	Tstm Wind	0 kts.	0	0	0	0
4 BEAGLE	05/07/1962	1730	Tstm Wind	0 kts.	0	0	0	0
5 BEAGLE	07/05/1966	1710	Tstm Wind	0 kts.	0	0	0	0
6 BEAGLE	04/12/1970	1730	Tstm Wind	0 kts.	0	0	0	0
7 BEAGLE	05/13/1974	0630	Tstm Wind	0 kts.	0	0	0	0
8 BEAGLE	06/14/1974	1635	Tstm Wind	0 kts.	0	0	0	0
9 BEAGLE	06/22/1974	0300	Tstm Wind	0 kts.	0	0	0	0
10 BEAGLE	05/10/1979	1415	Tstm Wind	61 kts.	0	0	0	0
11 BEAGLE	04/03/1981	1940	Tstm Wind	0 kts.	0	0	0	0
12 BEAGLE	04/03/1981	1940	Tstm Wind	0 kts.	0	0	0	0
13 BEAGLE	04/03/1981	2010	Tstm Wind	0 kts.	0	0	0	0
14 BEAGLE	07/02/1983	0220	Tstm Wind	0 kts.	0	0	0	0
15 BEAGLE	09/09/1984	1725	Tstm Wind	0 kts.	0	0	0	0
16 BEAGLE	10/16/1984	1604	Tstm Wind	0 kts.	0	0	0	0
17 BEAGLE	09/22/1985	2015	Tstm Wind	52 kts.	0	0	0	0
18 BEAGLE	07/28/1986	2140	Tstm Wind	52 kts.	0	0	0	0
19 BEAGLE	07/28/1986	2150	Tstm Wind	52 kts.	0	0	0	0
20 BEAGLE	08/14/1986	1715	Tstm Wind	50 kts.	0	0	0	0
21 BEAGLE	08/14/1986	1732	Tstm Wind	50 kts.	0	0	0	0
22 BEAGLE	05/24/1989	0030	Tstm Wind	50 kts.	0	0	0	0
23 BEAGLE	07/10/1989	1955	Tstm Wind	50 kts.	0	0	0	0
24 BEAGLE	08/05/1989	0845	Tstm Wind	52 kts.	0	0	0	0
25 BEAGLE	08/05/1989	0852	Tstm Wind	50 kts.	0	0	0	0
26 BEAGLE	06/02/1990	1030	Tstm Wind	0 kts.	0	0	0	0
27 BEAGLE	06/02/1990	1041	Tstm Wind	56 kts.	0	0	0	0
28 BEAGLE	03/22/1991	1730	Tstm Wind	50 kts.	0	0	0	0
29 BEAGLE	09/12/1991	1450	Tstm Wind	50 kts.	0	0	0	0

30 IAZ002>009 - 013>019 - 022>028 - 031>039 - 043>051 - 056>063 - 070>076 - 081>087 - 093>099 -	03/09/1993	2230	High Winds	0 kts.	0	0	500K	0
31 All of Iowa	04/14/1994	2200	High Winds	0 kts.	0	0	500K	0
32 Most of Iowa	04/26/1994	0900	High Winds	0 kts.	0	3	5.0M	0
33 Newton	07/01/1994	0200	Tstm Winds	N/A	0	0	5K	1K
34 BEAGLE	08/03/1994	1300	Tstm Winds	N/A	0	0	5K	50K
35 IAZ001>068 - 070>078 - 083>089	11/18/1994	0230	High Winds	0 kts.	0	0	200K	0
36 All Of Iowa	02/10/1995	0000	High Winds	0 kts.	0	0	100K	0
37 IAZ004>011 - 015>019 - 023>030 - 033>042 - 044>054 - 057>068 - 070>078 - 081>089 - 092>099	04/03/1995	1300	High Winds	0 kts.	0	0	125K	0
38 IAZ004>011 - 015>019 - 023>030 - 033>042 - 044>054 - 057>068 - 070>078 - 081>089 - 092>099	04/18/1995	0700	High Winds	0 kts.	0	0	500K	0
39 Prairie City	07/04/1995	1714	Tstm Winds	N/A	0	0	10K	2K
40 Newton	07/04/1995	1730	Tstm Winds	N/A	0	0	20K	1K
41 Much Of Iowa	10/23/1995	1300	High Winds	0 kts.	0	0	100K	0
42 IAZ004>011 - 015>019 - 023>029 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	01/17/1996	09:00 PM	High Wind	55 kts.	0	0	250K	0
43 IAZ004>011 - 015>019 - 023>029 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	02/10/1996	12:00 PM	High Wind	56 kts.	0	0	350K	0
44 IAZ004>011 - 015>019 - 023>029 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	03/24/1996	05:00 PM	High Wind	54 kts.	0	0	300K	0
45 IAZ004>011 - 015>019 - 023>029 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	04/25/1996	09:30 AM	High Wind	59 kts.	0	0	750K	0
46 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	10/29/1994	11:00 AM	High Wind	57 kts.	0	0	500K	100K

47 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	04/06/1997	09:00 AM	High Wind	55 kts.	0	0	1.8M	0
48 IAZ049>050 - 061>062 - 074>075 - 084>086 - 095>097	04/30/1997	12:00 PM	High Wind	52 kts.	0	0	100K	0
49 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062	05/05/1997	12:30 PM	High Wind	52 kts.	0	1	75K	0
50 Newton	08/14/1997	11:36 PM	Tstm Wind	52 kts.	0	0	10K	0
51 Colfax	08/15/1997	12:45 AM	Tstm Wind	65 kts.	0	0	40K	10K
52 Lynnville	08/16/1997	08:44 PM	Tstm Wind	65 kts.	0	0	15K	3K
53 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	04/12/1998	08:00 AM	High Wind	54 kts.	0	0	2.6M	0
54 Newburg	06/11/1998	01:00 PM	Tstm Wind	56 kts.	0	0	35K	2K
55 Colfax	06/11/1998	12:38 PM	Tstm Wind	65 kts.	0	0	15K	0
56 Colfax	06/11/1998	12:45 PM	Tstm Wind	52 kts.	0	0	5K	0
57 Baxter	06/11/1998	12:50 PM	Tstm Wind	50 kts.	0	0	3K	0
58 Colfax	06/18/1998	01:10 PM	Tstm Wind	61 kts.	0	0	40K	5K
59 Newton	06/18/1998	01:39 PM	Tstm Wind	52 kts.	0	0	5K	0
60 Monroe	06/18/1998	01:47 PM	Tstm Wind	50 kts.	0	0	3K	0
61 Darwin	06/18/1998	02:00 PM	Tstm Wind	65 kts.	0	0	75K	10K
62 Newton	06/18/1998	11:00 AM	Tstm Wind	50 kts.	0	0	3K	0
63 Monroe	06/27/1998	11:15 PM	Tstm Wind	52 kts.	0	0	10K	0
64 Colfax	06/29/1998	01:15 PM	Tstm Wind	52 kts.	0	0	3K	0
65 Prairie City	06/29/1998	01:16 PM	Tstm Wind	56 kts.	0	0	30K	2K
66 Newton	06/29/1998	01:22 PM	Tstm Wind	65 kts.	0	0	60K	5K
67 Monroe	06/29/1998	01:30 PM	Tstm Wind	52 kts.	0	0	15K	0
68 Lynnville	06/29/1998	12:42 PM	Tstm Wind	56 kts.	0	0	40K	0
69 Darwin	06/29/1998	12:46 PM	Tstm Wind	70 kts.	0	0	120K	25K
70 Colfax	07/06/1989	09:18 PM	Tstm Wind	52 kts.	0	0	3K	0
71 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	11/10/1998	02:00 AM	High Wind	61 kts.	1	0	17.3M	260K
72 IAZ028 - 038>039 - 049>050 - 061>062 - 072>075 - 081>086 - 092>097	03/08/2000	11:00 AM	High Wind	52 kts.	0	0	230K	0

73 Colfax	05/08/2000	04:00 AM	Tstm Wind	52 kts.	0	0	7K	0
74 Kellogg	05/08/2000	04:20 AM	Tstm Wind	56 kts.	0	0	5K	0
75 Kellogg	11/01/2000	01:25 PM	Tstm Wind	52 kts.	0	0	15K	0
76 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	04/07/2001	04:00 AM	High Wind	72 kts.	0	4	3.2M	0
77 Prairie City	06/12/2001	07:47 AM	Tstm Wind	52 kts.	0	0	2K	0
78 Colfax	07/22/2001	03:30 PM	Tstm Wind	57 kts.	0	0	25K	50K
79 Prairie City	09/07/2001	08:28 PM	Tstm Wind	52 kts.	0	0	5K	0
80 Prairie City	09/07/2001	08:40 PM	Tstm Wind	52 kts.	0	0	3K	0
81 Newton	09/07/2001	08:46 PM	Tstm Wind	61 kts.	0	0	15K	4K
82 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	03/09/2002	06:00AM	High Wind	54 kts.	0	0	2.6M	0
83 Newton Muni Arpt	03/09/2002	12:09 AM	Tstm Wind	87 kts.	0	0	1.5M	0
84 Colfax	03/09/2002	12:10 AM	Tstm Wind	52 kts.	0	0	5K	0
85 Newton Muni Arpt	03/09/2002	12:12 AM	Tstm Wind	55 kts.	0	0	5K	0
86 Monroe	06/02/2002	03:15 AM	Tstm Wind	52 kts.	0	0	10K	0
				TOTALS:	1	8	38.847M	530K

APPENDIX D

THUNDERSTORMS - LIGHTNING AND HAIL

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Thunderstorms -Lightning and Hail Overview

The National Weather Service estimates that over 100,000 thunderstorms occur each year on the U.S. mainland. Approximately 10 percent are classified as "severe." Thunderstorms can produce tornadoes, hailstorms, and extreme winds. The NWS classifies a thunderstorm as severe if its winds reach or exceed 58 mph," it produces a tornado, or it drops surface hail at least 0.75 inches in diameter.

Thunderstorms are responsible for significant structural damage to buildings, forest and wildfires, downed power lines and threes, and loss of life.

Lightning

Thunderstorms and lightning are often called the “underrated killer" events of the mainland U.S. Lightning occurs during all thunderstorms and can strike anywhere. Significant thunderstorm activity occurs during different months, but mostly from spring until early winter.

NOAA reports that in 1993 lightning strikes cause 43 deaths and $32.5 million in damage. Most lightning related deaths and injuries occur when people are outdoors during summer afternoons and evening.

Hail

Hailstorms develop from severe thunderstorms. Although they occur in every State on the mainland, hailstorms occur primarily in the Midwestern States. Hailstorms occur more frequently during the late spring and early summer. This period coincides with the peak agricultural season. Besides crop damage, hailstorms cause damage to buildings and automobiles, but they rarely result in loss of life.

The Midwest hailstorm and tornado event in April 1004 lasted 4 days. According to Property Claims Services in Rahway, NJ, It produced 300,000 damage claims.

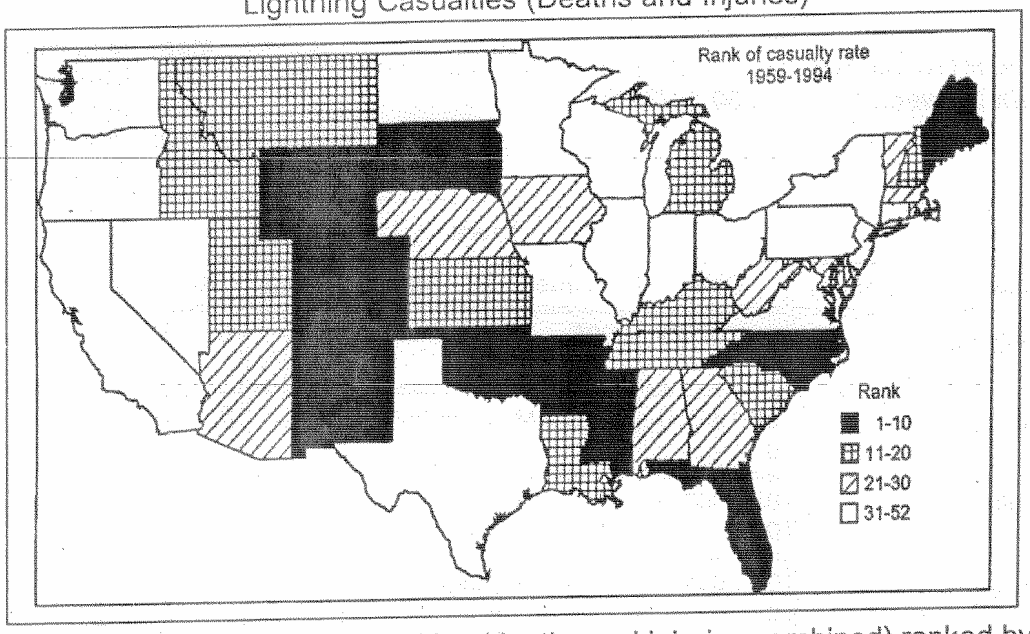
Mitigation Approaches

Thunderstorm, windstorm, and hail mitigation approaches are similar. They include:

1. Building Codes
2. Public Awareness
3. Weather warning system improvements and modernization

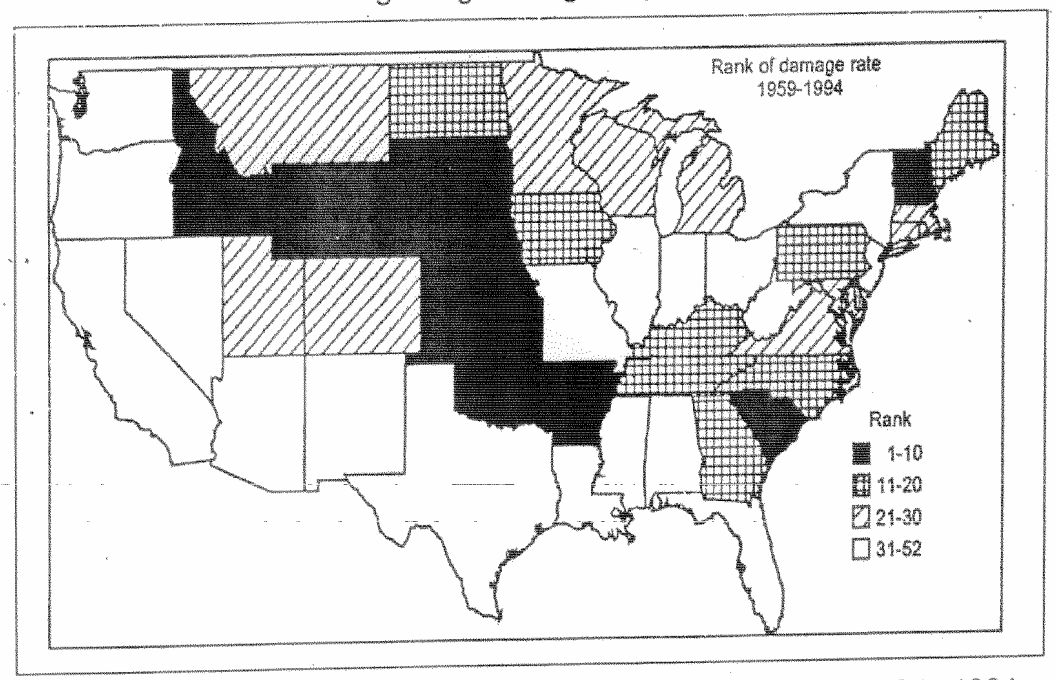
Grounding techniques for buildings have proven effective lightning mitigation.

Lightning Casualties (Deaths and Injuries)



US map of rates of lightning casualties (deaths and injuries combined) ranked by state from 1959 to 1994

Lightning Damage Reports



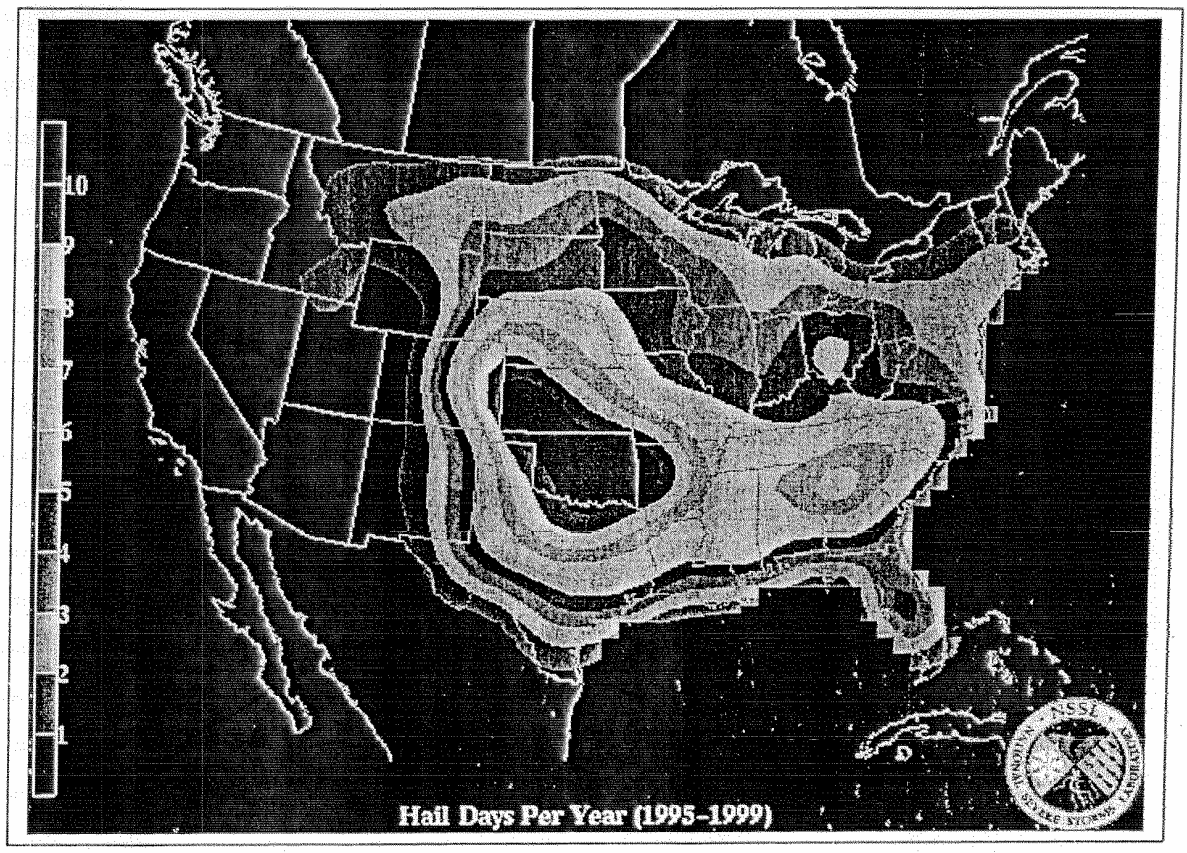
US map of rates of lightning damage reports ranked by state from 1959 to 1994

4 LIGHTNING event(s) were reported in **Beagle County, Iowa** between **01/01/1950** and **10/31/2002.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Iowa								
Location or County	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
1 Newton	04/10/1995	0925	Lightning	N/A	0	0	200K	0
2 Newton	06/13/2000	01:00 PM	Lightning	N/A	0	0	1K	0
3 Darwin	07/10/2000	05:00 AM	Lightning	N/A	0	0	1K	0
4 Newton	07/26/2000	09:50 AM	Lightning	N/A	0	0	12K	0
				TOTALS:	0	0	214K	0

HAIL DAYS PER YEAR



60 HAIL event(s) were reported in **Beagle County, Iowa** between **01/01/1950** and **10/31/2002.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Iowa								
Location or County	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
1 BEAGLE	09/28/1972	1330	Hail	1.75 in.	0	0	0	0
2 BEAGLE	06/18/1974	2210	Hail	1.75 in.	0	0	0	0
3 BEAGLE	06/14/1975	1350	Hail	1.75 in.	0	0	0	0
4 BEAGLE	05/28/1976	1643	Hail	0.75 in.	0	0	0	0
5 BEAGLE	07/30/1977	1930	Hail	0.75 in.	0	0	0	0
6 BEAGLE	06/17/1978	1530	Hail	1.75 in.	0	0	0	0
7 BEAGLE	09/09/1984	1715	Hail	1.75 in.	0	0	0	0
8 BEAGLE	06/16/1985	0800	Hail	0.75 in.	0	0	0	0
9 BEAGLE	06/23/1985	1639	Hail	1.75 in.	0	0	0	0
10 BEAGLE	08/17/1987	1839	Hail	1.50 in.	0	0	0	0
11 BEAGLE	05/08/1988	1123	Hail	2.00 in.	0	0	0	0
12 BEAGLE	04/26/1989	1555	Hail	1.50 in.	0	0	0	0
13 BEAGLE	04/26/1989	1637	Hail	1.75 in.	0	0	0	0
14 BEAGLE	05/24/1989	0345	Hail	0.75 in.	0	0	0	0
15 BEAGLE	07/18/1989	0046	Hail	1.75 in.	0	0	0	0
16 BEAGLE	04/12/1991	1010	Hail	1.75 in.	0	0	0	0
17 BEAGLE	06/01/1991	1035	Hail	1.75 in.	0	0	0	0
18 Prairie City	04/08/1995	2127	Hail	1.50 in.	0	0	40K	0
19 Newton	06/05/1997	03:00 PM	Hail	1.00 in.	0	0	5K	35K
20 Colfax	04/13/1998	04:24 AM	Hail	0.75 in.	0	0	1K	0
21 Colfax	05/19/1998	03:24 PM	Hail	1.00 in.	0	0	10K	10K
22 Prairie City	05/18/2000	11:20 AM	Hail	1.75 in.	0	0	5K	5K
23 Prairie City	05/18/2000	11:23 AM	Hail	3.00 in.	0	0	20K	10K
24 Prairie City	05/18/2000	11:25 AM	Hail	1.75 in.	0	0	20K	2K
25 Newton	05/18/2000	11:28 AM	Hail	2.75 in.	0	0	50K	5K
26 Monroe	05/18/2000	11:40 AM	Hail	2.75 in.	0	0	10K	5K
27 Kellogg	05/18/2000	11:43 AM	Hail	1.75 in.	0	0	5K	5K
28 Newton	05/18/2000	11:43 AM	Hail	1.75 in.	0	0	10K	5K

29 Reasnor	05/18/2000	11:43 AM	Hail	2.75 in.	0	0	35K	5K
30 Newton	05/30/2000	08:48 PM	Hail	0.88 in.	0	0	2K	3K
31 Newton	05/30/2000	08:50 PM	Hail	1.50 in.	0	0	8K	5K
32 Newton	05/30/2000	09:44 PM	Hail	0.88 in.	0	0	3K	5K
33 Kellogg	05/30/2000	10:00 PM	Hail	1.00 in.	0	0	5K	5K
34 Galesburg	05/30/2000	11:10 PM	Hail	0.88 in.	0	0	2K	5K
35 Baxter	07/26/2000	09:30 AM	Hail	0.75 in.	0	0	0	5K
36 Baxter	07/26/2000	09:35 AM	Hail	1.00 in.	0	0	5K	5K
37 Kellogg	07/26/2000	09:35 AM	Hail	1.00 in.	0	0	3K	10K
38 Newton	07/26/2000	09:42 AM	Hail	0.75 in.	0	0	0	10K
39 Monroe	04/08/2001	06:37 PM	Hail	1.00 in.	0	0	5K	0
40 Reasnor	04/08/2001	06:41 PM	Hail	0.88 in.	0	0	2K	0
41 Newton	05/10/2001	05:52 PM	Hail	1.00 in.	0	0	5K	0
42 Newton	05/10/2001	06:00 PM	Hail	1.00 in.	0	0	5K	0
43 Reasnor	05/10/2001	06:17 PM	Hail	1.00 in.	0	0	5K	0
44 Darwin	05/10/2001	06:29 PM	Hail	1.00 in.	0	0	5K	0
45 Prairie City	05/10/2001	06:36 PM	Hail	0.88 in.	0	0	3K	0
46 Darwin	05/10/2001	06:48 PM	Hail	0.75 in.	0	0	0	0
47 Darwin	05/10/2001	06:50 PM	Hail	1.25 in.	0	0	10K	0
48 Baxter	06/12/2001	01:00 PM	Hail	1.00 in.	0	0	5K	5K
49 Newton	06/12/2001	06:05 AM	Hail	0.88 in.	0	0	2K	5K
50 Baxter	06/12/2001	08:59 AM	Hail	1.00 in.	0	0	2K	5K
51 Galesburg	06/12/2001	09:20 AM	Hail	1.25 in.	0	0	5K	5K
52 Darwin	06/12/2001	09:40 AM	Hail	1.75 in.	0	0	25K	5K
53 Lynnville	06/12/2001	09:55 AM	Hail	1.75 in.	0	0	25K	10K
54 Reasnor	04/18/2002	06:42 PM	Hail	0.88 in.	0	0	3K	0
55 Newton	04/18/2002	07:06 PM	Hail	0.88 in.	0	0	3K	0
56 Colfax	05/29/2002	03:46 PM	Hail	1.00 in.	0	0	5K	5K
57 Colfax	06/26/2002	04:13 PM	Hail	1.00 in.	0	0	5K	5K
58 Colfax	06/26/2002	04:31 PM	Hail	1.00 in.	0	0	5K	5K
59 Colfax	06/26/2002	04:57 PM	Hail	0.75 in.	0	0	0	5K
60 Colfax	07/28/2002	07:54 PM	Hail	0.88 in.	0	0	2K	5K
				TOTALS:	0	0	366K	200K

APPENDIX E

WINTER STORMS

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Winter Storms

Winter storms consisting of extreme cold and heavy concentrations of snowfall or ice can last for several days. The occurrence of large snowstorms, ice storms, and severe blizzards has a substantial impact on utilities and transportation systems, and can result in loss of life due to accidents or hypothermia. People can become stranded at home, often without utilities or other services.

A winter storm can range from moderate snowfall over a few hours to blizzard conditions. Many winter storms are accompanied by low temperatures and heavy and/or blowing snow. The leading cause of death is automobile accidents. Deaths also occur as a result of hypothermia and heart attacks due to over exertion.

Businesses may experience severe financial loss because of reduced productivity during unscheduled downtime and customers' inability to reach the facility. Accumulation of ice can cause damage to power lines and disruption of service and ice can pose hazards to motorists and pedestrians. Extremely cold weather may cause water mains to breeze. Agricultural interests are also impacted. Not only are crops vulnerable to extreme temperatures, but also livestock losses can occur.

Mitigation

1. Weatherize homes. Properly insulating homes conserves electricity and reduce power demands. Caulking and weather stripping doors and windowsills keep out cold air. These actions allow the inside temperatures to stay warmer.
2. Protect pipes to avoid freezing.
3. Install snow fences to reduce drifting in roads and paths.
4. Educate the public about winter storm hazards. This is particularly important if the community has a population that emigrated from more moderate climates and has little experience with winter weather.
5. Promote NOAA weather radios and educate the public about the different National Weather Service announcement.
6. Establish tree-trimming programs that remove branches near power lines.
7. Identify vulnerable populations who may require special assistance.
8. Enact building codes with snow load requirements.
9. Require buried power lines in new subdivisions.

APPENDIX F

DROUGHT

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Drought

Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. Other climatic factors such as high temperatures, prolonged high winds, and low relative humidity can aggravate the severity of a drought. Severity depends on duration, intensity, geographic extent and the demands made by human activities and vegetation of regional water supplies.

During droughts crops do not mature, wildlife and livestock are undernourished, land values decrease and unemployment increases. Traditionally, States have relied in the Federal Government to provide drought relief when shortages reach disaster or near-disaster proportions. Forty separate drought relief programs administered by 16 Federal agencies provided nearly $8 billion in relief during the mid-1970 droughts and Federal assistance totaled more than $5 billion in response to the 1987-89 drought. However, Federal assistance covers only a small portion of the economic losses. The average yearly loss to drought in the US is between $6 and $8 million and the total losses attributed to the 1987-89 drought were between $39 and $40 billion.

Mitigation

The widespread nature of droughts makes local level drought mitigation a difficult task. This, coupled with an increasing awareness of the inefficient past responses and impacts of droughts, has generated momentum in many areas at the State and/or regional level. Mitigation actions adopted by States fall into the following areas:

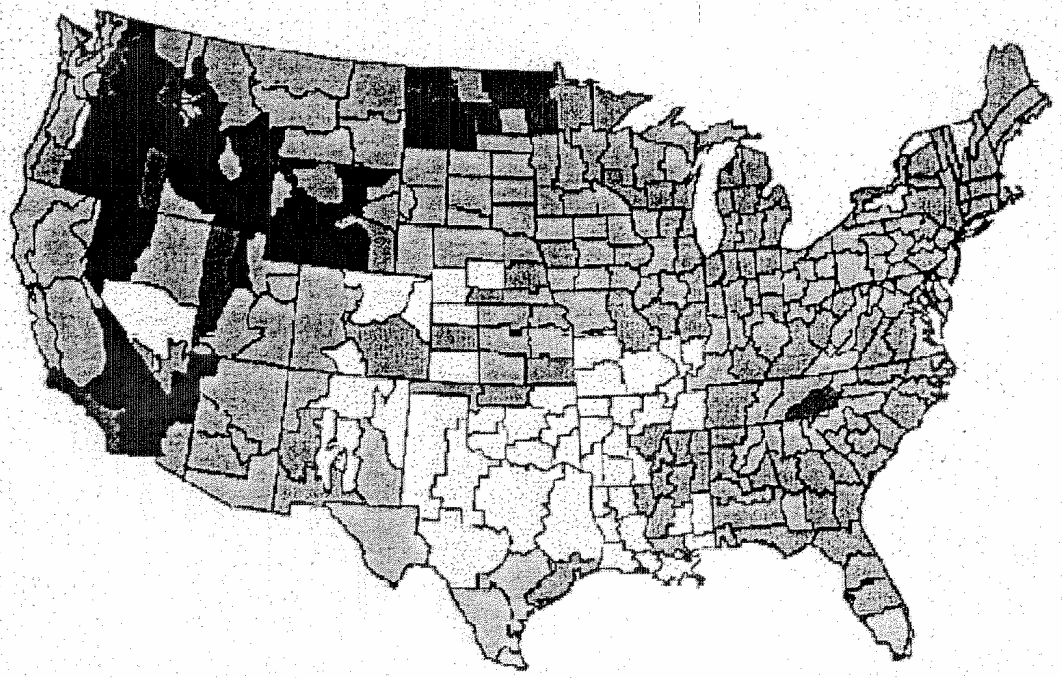
1. Assessment programs
2. Legislation and public policy
3. Water supply augmentation and development of new supplies
4. Public awareness and education programs
5. Technical assistance on water conservation
6. Demand reduction and after conservation programs
7. Emergency response programs
8. Water use conflict resolution
9. Drought contingency plans

PALMER DROUGHT MAP

Palmer Drought Severity Index

1985–1995

Percent of time in severe and extreme drought



% of time PDSI ≤ -3

- 0%
- 0.10% to 4.99%
- 5% to 9.99%
- 10% to 19.99%
- 20% to 29.99%
- Greater than 30%

SOURCE: McKee et al. (1993); NOAA (1990); High Plains Regional Climate Center (1996)
Albers Equal Area Projection; Map prepared at the National Drought Mitigation Center

NDMC

10 DROUGHT event(s) were reported in **Iowa** between **01/01/1950** and **10/31/2002.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 All of Iowa	08/01/1995	0000	Drought	N/A	0	0	0	0.5B
2 IAZ057>062 - 070>075 - 081>086 - 092>097	07/20/1999	12:00 PM	Drought	N/A	0	0	0	109.9M
3 IAZ001>003 - 012>014 - 020>022 - 031>032	11/01/1999	12:00 AM	Drought	N/A	0	0	0	0
4 IAZ001>003 - 012>014 - 020>022 - 031>032	12/01/1999	12:00 AM	Drought	N/A	0	0	0	0
5 IAZ001>003 - 012>014 - 020>022 - 031>032	02/01/2000	12:00 AM	Drought	N/A	0	0	0	0
6 IAZ001>003 - 012>014 - 020>022 - 031>032	03/01/2000	12:00 AM	Drought	N/A	0	0	0	0
7 IAZ001>003 - 012>014 - 020>022 - 031>032	04/01/2000	12:00 AM	Drought	N/A	0	0	0	0
8 IAZ033 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	08/14/2000	12:00 AM	Drought	N/A	0	0	0	150.1M
9 IAZ033 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	09/01/2000	12:00 AM	Drought	N/A	0	0	0	161.0M
10 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	08/01/2001	12:00 AM	Drought	N/A	0	0	0	578.9M
				TOTALS:	0	0	0	1.500B

5 DROUGHT event(s) were reported in **Beagle County, Iowa** between **01/01/1995** and **10/31/2002.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 All of Iowa	08/01/1995	0000	Drought	N/A	0	0	0	0.5B
2 IAZ057>062 - 070>075 - 081>086 - 092>097	07/20/1999	12:00 PM	Drought	N/A	0	0	0	109.9M
3 IAZ033 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	08/14/2000	12:00 AM	Drought	N/A	0	0	0	150.1M
4 IAZ033 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	09/01/2000	12:00 AM	Drought	N/A	0	0	0	161.0M
5 IAZ004>007 - 015>017 - 023>028 - 033>039 - 044>050 - 057>062 - 070>075 - 081>086 - 092>097	08/01/2001	12:00 AM	Drought	N/A	0	0	0	578.9M
				TOTALS:	0	0	0	1.500B

APPENDIX G

EARTHQUAKE

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WHAT IS AN EARTHQUAKE?

An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. This shaking can cause buildings and bridges to collapse; 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, old waterways, or other unstable soil are most at risk. Buildings or trailers and manufactured homes not tied to a reinforced foundation anchored to the ground are also at risk since they can be shaken off their mountings during an earthquake. Earthquakes can occur at any time of the year.

EMERGENCY INFORMATION

1. The best protection during an earthquake is to get under heavy furniture such as a desk, table, or bench
2. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls. Many of the 120 fatalities from the 1933 Long Beach earthquake occurred when people ran outside of buildings only to be killed by falling debris from collapsing walls.
3. Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects.

DANGER ZONES

Earthquakes occur most frequently west of the Rocky Mountains, although historically the most violent earthquakes have occurred in the central United States. All 50 states and all U.S. territories are vulnerable to earthquakes. Forty-one states or territories are at moderate to high risk.

DID YOU KNOW...

- The granddaddy of earthquakes was along the New Madrid Fault in Missouri where a 3-month long series of quakes in 1811--1812 included the three quakes larger than a magnitude of 8. These quakes were felt over 2 million square miles. Charles F. Richter developed the Richter Scale in 1935. It is a logarithmic measurement of the amount of energy released by an earthquake. Earthquakes with a magnitude of at least 4.5 are strong enough to be recorded by sensitive seismographs all over the world. In the United States several thousand shocks of varying sizes occur annually.
- The Modified Mercalli Intensity scale also measures the effects of earthquakes. The intensity of a quake is evaluated according to the observed severity of the quake at specific locations. The Mercalli scale rates the intensity on a Roman numeral scale that ranges from I to XI.
- The Loma Prieta (northern California) earthquake of October 1989 registered 7.1 on the Richter scale and as high as XI on the Mercalli scale.

Earthquake History of Iowa

Iowa has experienced only minor earthquake activity since the United States obtained control of the State under the Louisiana Purchase in 1803. It was not until 1857, 11 years after Statehood, that the present boundaries were drawn up. As a territory, Iowa had included Minnesota and parts of North and South Dakota.

The great New Madrid Missouri, earthquakes, of 1811 - 1812 were the first reported felt in Iowa. The absence of historical records from the territory prevents an accurate assessment of the actual effects from these earthquakes.

An earthquake shook the Sioux City area on July 3, 1858. Press reports described the tremors as of sufficient force to shake pictures and crockery from their places. On October 9, 1872, Sioux City again experienced a moderately strong earthquake. Intensity V effects were noted near the center of the disturbance, with the total felt areas estimated to be about 3,000 square miles, including adjoining portions of the Dakotas.

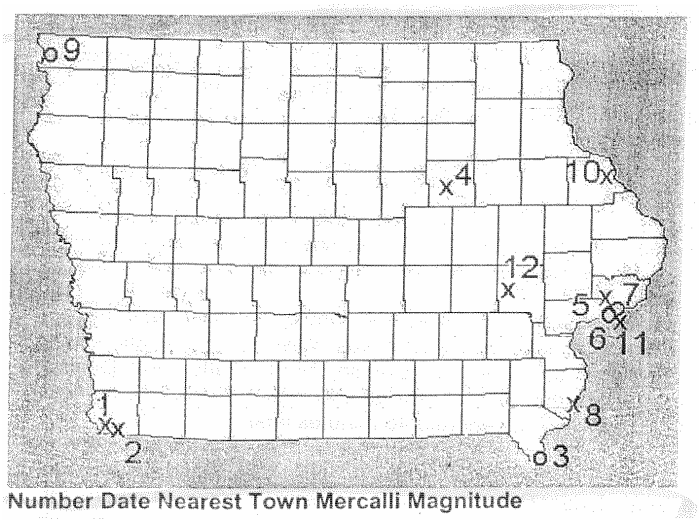
On November 15, 1877, another earthquake was felt throughout Iowa and eastern Nebraska, and in parts of Missouri, Kansas, the Dakotas, Wisconsin, and Minnesota. The strongest effects were noted at Columbus, Lincoln, North Platte, and Omaha, Nebraska. However, large cracks in the walls of several buildings in Sioux City resulted from this shock. A second earthquake was reported 45 minutes later.

An intensity V shock was reported at Keokuk on April 13, 1905. Buildings were shaken, but no serious damage was done. The shock was apparently local in character. Riverton, Iowa, felt intensity V effects from an earthquake on March 1, 1935, which was centered in southeastern Nebraska.

Two other events are significant. On October 20, 1965, an earthquake in eastern Missouri affected a 160,000 square mile area, and reportedly caused large cracks in a house foundation at Indianola, Iowa. Intensity V effects were also noted at Ottumwa. The earthquake of November 9, 1968, centered in Illinois, produced Intensity V effects in Iowa at Albia, Bloomfield, Burlington, Clinton, Elkader, Muscatine, and Wapello. The earthquake was not felt in the northwestern quadrant of the State. The 1895 tremor, centered near Charleston, Missouri, did some slight damage to a few chimneys in Keokuk. This earthquake was felt noticeably in the southeastern part of Iowa, and probably felt over the whole State.

Earthquakes with Epicenters in Iowa

Only 12 earthquakes with epicenters in Iowa are known in historic times. The first known occurrence was in 1867 near Sidney in southwest Iowa; the most recent occurrence was in 1948 near Oxford in east-central Iowa. The largest Iowa earthquake (Mercalli magnitude VI) occurred near Davenport in southeast Iowa in 1934. None of these events were instrumentally recorded



1. Apr. 28, 1867, Sidney (IA) / Nebraska City (NE), IV
2. Dec. 09, 1875, Sidney (IA) / Nebraska City (NE), III
3. April 13, 1905, Keokuk (IA) / Wayland (MO) IV-V
4. Jan. 26, 1925, Waterloo (IA) II
5. Nov. 12, 1934, Davenport (IA) / Rock Island (IL)*VI
6. Jan. 05, 1935, Davenport (IA) / Rock Island (IL) IV
7. Jan. 05, 1935, Davenport (IA) / Rock Island (IL) III
8. Feb. 26, 1935, Burlington (IA) III
9. Oct. 11, 1938, Inwood (IA) V
10. Nov. 08, 1938, Dubuque (IA) **-II
11. Nov. 24, 1939, Davenport (IA) / Rock Island (IL) II-III
12. Apr. 20, 1948, Oxford (IA) IV

The Modified Mercalli Intensity Scale

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture; damage to chimneys, and finally - total destruction. Although numerous *intensity scales* have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects actually experienced at that place. After the occurrence of widely felt earthquakes, the Geological Survey mails questionnaires to postmasters in the disturbed area requesting the information so that intensity values can be assigned. The results of this postal canvass and information furnished by other sources are used to assign intensity within the felt area. The maximum observed intensity generally occurs near the epicenter.

The *lower* numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The *higher* numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

The following is an abbreviated description of the 12 '"eve's of Modified Mercalli intensity.

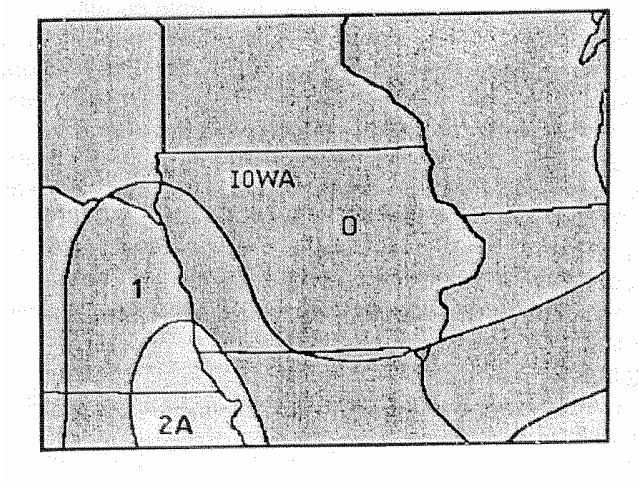
I. Not felt except by a very few under especially favorable conditions.
II. Felt only by a few persons at rest, especially on upper floors of buildings.
III. Felt, quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

POTENTIAL FOR FUTURE IOWA EARTHQUAKES AND EARTHQUAKE DAMAGE

Most of Iowa falls within Uniform Building Code (UBC) seismic zone 0, with the southern tip of Lee County, in southeast Iowa, and portions of western Iowa falling within seismic zone 1. Most of Fremont County. in southwest Iowa, lies in seismic zone 2A.

Seismic Impact Zones are regions with a 90% or greater probability that the acceleration (due to a seismic event) will exceed 0.10 g (or 10% of the Earth's gravitational pull) in 250 years. Algermissen delineated these areas and others (1982, U.S. Geological Survey Open File Report 82-1033) based on probabilistic estimates of the maximum acceleration and velocity in rock. The zones are delineated on Plate 3 of this report. Federal regulations for hazardous waste landfills state that new units and lateral expansions shall not be located in seismic impact zones, unless it can be demonstrated that the facility is designed to resist the event.

Uniform Building Code Seismic Hazard Map



APPENDIX H

HAZARDOUS MATERIALS

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Hazardous Materials Overview

Under the Emergency Planning and Right to Know Act of 1986, the US Department of Transportation (DOT) identified as hazardous 308 specific chemicals from 20 chemical categories.

USEPA sorts HAZMAT into the following categories:

- Toxic agents (irritants, asphixiants, anesthetics and narcotics, sensitizers)
- Other types of toxic agents (hepatoxic and nephratoxic agents, carcinogens, mutagens)
- Hazardous wastes
- Hazardous substances
- Toxic pollutants
- Extremely hazardous substances

DOT classifies HAZMAT in the following categories:

- Explosive
- Blasting agent
- Flammable liquid
- Flammable solid
- Oxidizer
- Organic peroxide
- Corrosive material
- Compressed gas
- Flammable compressed gas
- Poison (A and B)
- Irritating materials
- Inhalation hazard
- Etiological agent
- Radioactive materials
- Other regulated material

To identify the extent of the hazard in a particular community, planning personnel and others must determine:

- What types of HAZMAT are stored, handled, processed, or transported
- Where and how those functions are performed

Storage, handling, and processing will usually take place at fixed sites:

- Bulk chemical, petroleum processing, and other industrial facilities
- Hazardous waste disposal and water treatment facilities
- Public and private chemistry laboratories
- US Army weapons depots

The 1986 Act requires that companies report releases of designated hazardous chemicals to USEPA, even if releases do not result in human exposure. Types of releases are:

- Air emissions of gases or particles from a pressure relief valve, smokestack, ruptured reaction vessel, broken pipe or other equipment at a chemical plant or other fixed-site facility; from broken, loose-fitting, or punctured equipment, containers, or cylinders on transportation vehicles; and from solid or liquid discharges onto ground or into water
- Discharges into bodies of water from damaged ships, barges, underwater pipelines, and trucks or railroad cars that fall into the water;
- Discharges as outflows from sewer or drain outfills, runoff from spills on land, runoff from water used to control fires, or contaminated groundwater
- Discharges onto land
- Solid waste disposal in onsite landfills
- Injection of wastes into underground wells
- Transfers of wastewater to public sewage plants
- Transfers of wastes to offsite facilities for treatment or storage.

Fixed-Site Facilities:

- Large refineries, chemical plants, and storage terminals
- Moderate-sized industrial users, warehouses, and isolated storage tanks for water treatment
- Small quantity users and storage facilities, such as school laboratories, florists/greenhouses, and hardware/automotive stores

Highway and Rail Transportation

- Transportation on highways involves tanker trucks or trailers and specialized bulk-cargo vehicles
- Average trip lengths are 28 miles for gasoline trucks and 260 miles for chemical trucks
- Most common releases from railroad events are:
    - Collisions and derailments that result in large spills or discharges
    - Releases from leaks in fittings,seals, or relief valves, and improper closures or defective equipment.
        - Account for 70% of the nearly 1,000 railroad-related events each year

Air Transportation

- Limited to small packages
- 1986 figures: 200,000 to 300,000 tons
- Few events occur each year; usually due to violations of regulations

Transportation Incidents

Mode of Transportation	Number of Accidents	Associated Deaths	Associated Injuries
Air	1,220	0	153
Highway	41,781	79	1,569
Railway	7,886	1	423
Water	83	1	35
Other	29	0	2
Total	50,999	81	2,182

Hazardous Materials Incidents by Transportation Mode (totals, 1983 *thru* 1990*)

Natural Hazards

Natural hazards can cause HAZMAT releases at **fixed** sites. When a HAZMAT event occurs during a natural disaster, access to facilities may be restricted, waterlines for fire suppression may be broken, and response personnel and resources may be limited.

Natural hazards may cause **transportation related** HAZMAT events, including:

- Heavy rainfall during thunderstorms can cause slippery road conditions resulting in highway carrier accidents
- Flood, lightning, fires, and severe winter storms cause pipelines to fail
- Snow, ice, and high-wind conditions during severe winter storms cause traffic accidents
- High velocities and volumes of floodwaters wash out bridges, roads, and fixed HAZMAT manufacturing, handling, and storage facilities

HAZMAT releases pose short- and long-term toxological threats to humans and to terrestrial and aquatic plants and wildlife. Toxic materials affect people through one of three processes:

- Inhalation exposures result from breathing gases that may have been vented from containers, liquid aerosols generated during venting of pressurized liquids, fumes from spilled acids, vapors created by evaporating liquids, and airborne dust.
- Ingestion exposures typically result from poor hygiene habits after handling contaminated materials or eating contaminated food, or the inhalation of insoluble particles that become trapped in mucous membranes
- Skin may be affected by direct contact with gas, liquid, or solid forms of hazardous materials

Local Emergency Planning Committees

Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 requires that each community establish a Local Emergency Planning Committee (LEPC) to be responsible for developing an emergency plan for preparing for and responding to chemical emergencies in that community.

This emergency plan must include the following

- an identification of local facilities and transportation routes where hazardous material are present
- the procedures for immediate response in case of an accident (this must include a community-wide evacuation plan)
- a plan for notifying the community that an incident has occurred
- the names of response coordinators at local facilities
- a plan for conducting exercises to test the plan.

The plan is reviewed by the State Emergency Response Commission (SERC) and publicized throughout the community. The LEPC is required to review, test, and update the plan each year.

Mitigation Approaches

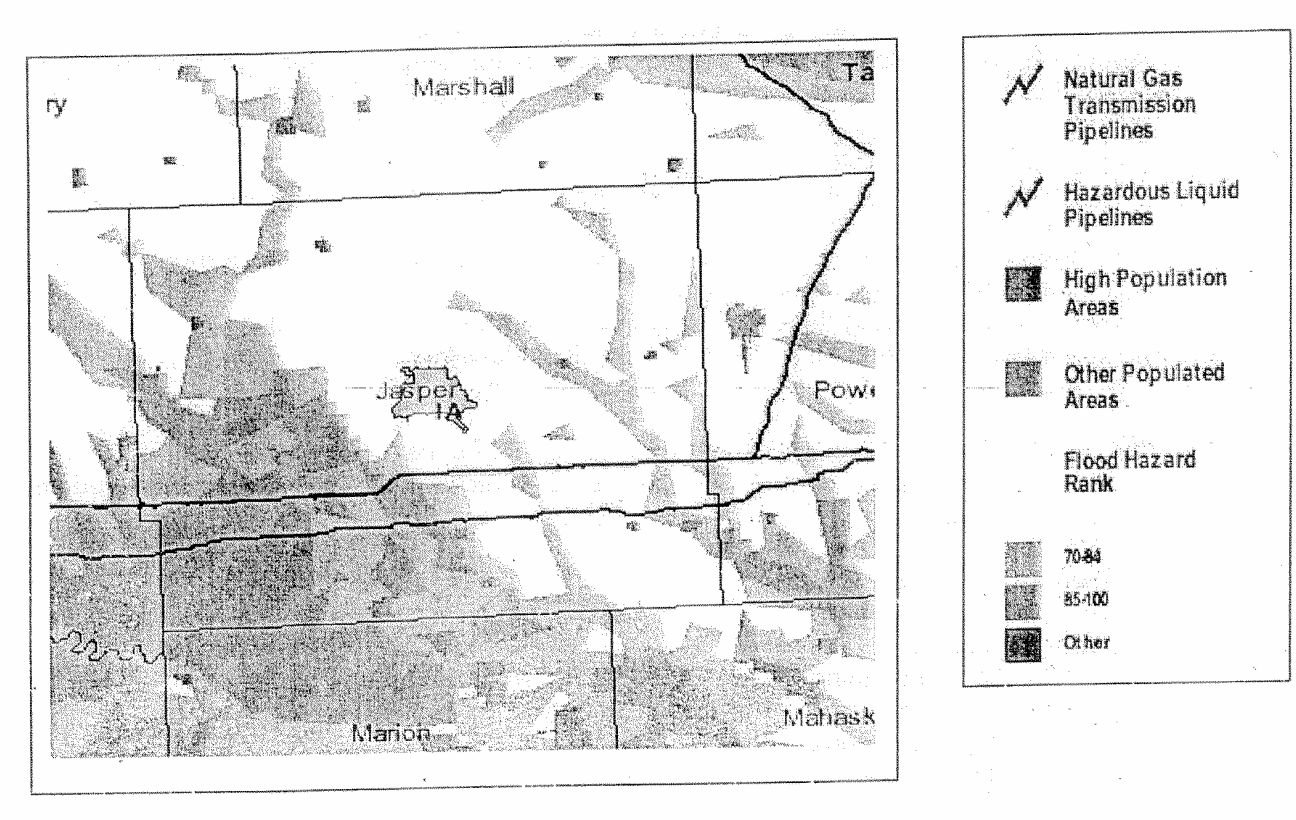
<u>Physical Adjustments</u>

- Planning and building HAZMAT facilities to withstand prevalent natural hazards identifying and avoiding sites where hazards are highly likely to occur
- Predicting the occurrence of hazards
- Preventing or altering the characteristics of hazards

<u>Social Adjustments</u>

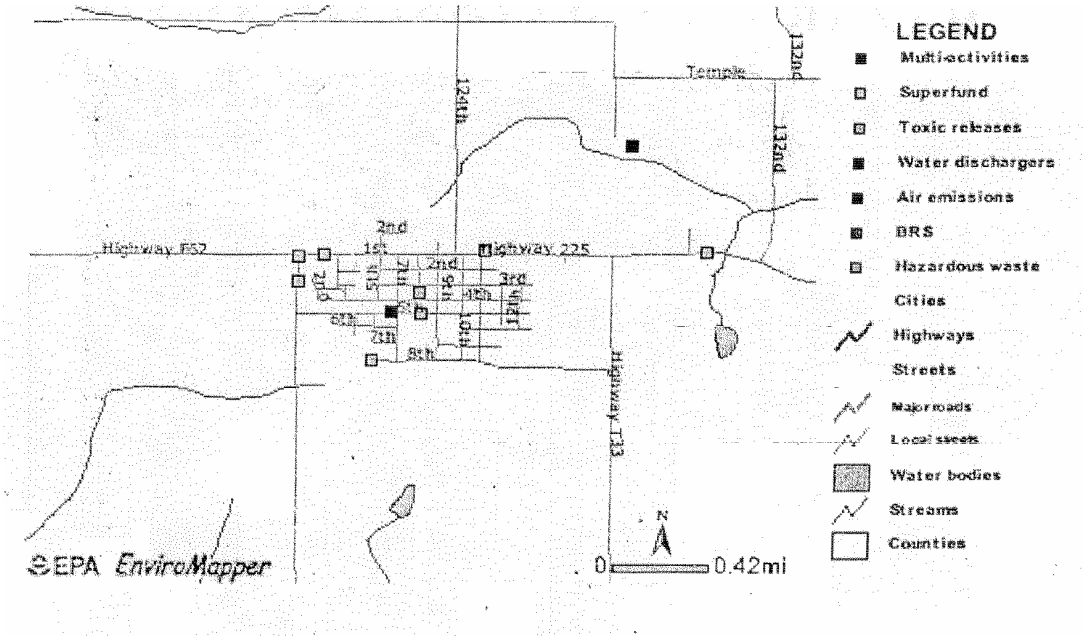
- Restricting the use of land and establishing minimum standards for avoiding hazardous sites and conditions
- Implementing Local Emergency Planning Committees to enhance public awareness of hazardous materials in communities
- Instituting public awareness campaigns in areas prone to hazards in the vicinity of HAZMAT sites
- Initiating emergency preparedness and evacuation programs to protect life and property when warnings are issued or events occur
- Establishing systems for notifying key individuals in the public and private sectors, including supervisory personnel of facilities requiring special notification, water users, supervisory personnel of water treatment plants, utility companies, air traffic controllers, railroad dispatchers, and US Coast Guard or harbor master facilities
- Spreading the economic loss among a larger population through insurance, taxation, and monetary grants
- Reconstructing communities to be less vulnerable to future hazard events and HAZMAT releases

BEAGLE COUNTY PIPELINE



HAZARDOUS MATERIALS TEAMS

LIST OF EPA-REGULATED FACILITIES
DARWIN, IA



FACILITY NAME/ADDRESS	Permitted Discharges To Water?	Toxic Releases Reported?	Hazardous Waste Handler?	Air Releases Reported?
Bz Auto Company 702 5th St	No	No	**Yes**	No
Lynnville Transport 13051 Hwy 225 E	No	No	**Yes**	No
Lynnville-Darwin High School 12476 Hwy 225 E	No	No	**Yes**	No
Darwin Auto Body 102 1st Street	No	No	**Yes**	No
Darwin City of Stp City Clerk	**Yes**	No	No	No
Darwin Construction 5th Ave & 8th St	No	No	**Yes**	No
Darwin Cooperative Exchange 504 6th Avenue	No	No	**Yes**	**Yes**
Darwin Mfg Co 307 7th Ave	No	No	**Yes**	No
Darwin Oil Co Inc 206 1st St	No	No	**Yes**	No
Zylstra Express Ltd 205 1st Ave	No	No	**Yes**	No

RISK ASSESSMENT: *§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

Identifying Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the type … of all natural hazards that can affect the jurisdiction.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include **a description** of the types of **all natural hazards** that affect the jurisdiction? If the hazard identification omits (without explanation) any hazards commonly recognized as threats to the jurisdiction, this part of the plan cannot receive a Satisfactory score. Consult with the State Hazard Mitigation Officer to identify applicable hazards that may occur in the planning area.	Hazard Analysis P. 1 – 17, Appendix B – H	The plan addresses hazards expected in this region. **Recommended Revisions:** • Identify all hazards considered – including ones not studied because they are not applicable to allow the reviewers to understand the universe of hazards that were considered. • Describe the process for identifying hazards and list the sources used to identify hazards. The process for identifying hazards could involve: reviewing reports, plans, flood ordinances, and land use regulations, among others; talking to experts from Federal, State, and local agencies and universities; searching the Internet and newspapers; and interviewing long-time residents. • Provide an explanation for eliminating any hazards from consideration. • Addressing manmade hazards in the plan is not necessary to meet the DMA 2000 requirements, but highly encouraged. For more information, see *Integrating Manmade Hazards into Mitigation Planning* (FEMA 386-7), Phase 2. For more information on identifying hazards, see *Understanding Your Risks* (FEMA 386-2), Step 1, Worksheet #1, Identify the Hazards.		✓
		SUMMARY SCORE		✓

Profiling Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the … location and extent of all natural hazards that can affect the jurisdiction. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the risk assessment identify the **location** (i.e., geographic area affected) of each natural hazard addressed in the plan?	Hazard Analysis P. 3 - 17	With the exception of flash floods, all hazards are City-wide. No specific geographic area is identified for flash floods, although flash floods affect up to 5% of the jurisdiction. **Required Revisions:** • For flash floods, describe the hazard's location or geographical area that would be affected. **Recommended Revisions:** • Note any data limitations for profiling hazards and include in the mitigation strategy actions for collecting the data to complete and improve future risk analysis efforts. For more information on profiling hazards, see *Understanding Your Risks* (FEMA 386-2), Step 2.	✓	
B. Does the risk assessment identify the **extent** (i.e., magnitude or severity) of each hazard addressed in the plan?	Hazard Analysis P. 3 – 17, Appendix B – H	Each hazard includes a statement regarding "severity of impact" and "maximum extent." **Recommended Revisions:** • For flash floods, include velocity characteristics. • Include in the hazard profile conditions such as topography, soil characteristics, and meteorological conditions that may exacerbate or mitigate the potential effects of a particular hazard. See *Understanding Your Risks* (FEMA 386-2), page 2-13 for information on these conditions and their effect on hazards like floods. For more information on profiling hazards, see *Understanding Your Risks* (FEMA 386-2), Step 2.		✓
C. Does the plan provide information on **previous occurrences** of each hazard addressed in the plan?	Hazard Analysis P. 3 - 17	Each profile includes discussion of "historical occurrence" and the appendix data includes additional historic records		✓

		Recommended Revisions: • Include in the description for each event the date of occurrence, damages that occurred in or near the planning area (e.g., property damage, cost of recovery, lives lost); level of severity (i.e., flood depth or extent, wind speeds, earthquake intensity, etc.); and duration of the event. For more information on profiling hazards, see *Understanding Your Risks* (FEMA 386-2), Step 2.		
D. Does the plan include the **probability of future events** (i.e., chance of occurrence) for each hazard addressed in the plan?	Hazard Analysis P. 3 - 17	Profiles of each hazard include a description of "probability." **Recommended Revisions:** • Describe the methodology or sources used to determine the probability for each natural hazard. For more information on profiling hazards, see *Understanding Your Risks* (FEMA 386-2), Step 2.		✓
		SUMMARY SCORE	✓	

Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	Hazard Analysis P. 3 - 17	Each hazard profile includes a description of "vulnerability." **Recommended Revisions:** • While the Rule does not require a discussion about the number of people or special populations at risk, such as the elderly, disabled, or others with special needs, their consideration in the risk assessment will enable the development of appropriate actions to assist such populations during or after a disaster. For a discussion on vulnerability assessment overview, see *Understanding Your Risks* (FEMA 386-2), Step 3, Worksheet #3a, Inventory Assets.		✓
B. Does the plan address the **impact** of each hazard on the jurisdiction?	Hazard Analysis P. 3 - 17	Each hazard profile includes a description of "Maximum		✓

		Threat," "Severity of Impact," and "Speed of Onset." For a discussion on preparing a vulnerability assessment, see *Understanding Your Risks* (FEMA 386-2), Step 3, Worksheet #3a, Inventory Assets.		
		SUMMARY SCORE		✓

Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): *The plan* ***should*** *describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area … .*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Hazard Analysis P. 3 - 17	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** The profiles do not indicate the number or types of buildings, infrastructure, or critical facilities for each hazard. **Recommended Revisions:** • For flash floods, and community-wide hazards, identify the type and number of **existing** buildings, infrastructure, and critical facilities within each hazard area. **Additional Suggestions:** • Identify the kinds of buildings (e.g., residential, commercial, institutional, recreational, industrial, and municipal); infrastructure, (e.g., roadways, bridges, utilities, and communications systems); and critical facilities (e.g., shelters, hospitals, police, and fire stations). • Describe the process or method used for identifying existing buildings, infrastructure, and critical facilities. • If limited data are available, focus on identifying critical facilities located in the identified hazard areas and identify the collection of data for the remaining buildings and infrastructure as an action item in the mitigation strategy. • While not required by the Rule, it is useful to inventory structures located within areas that have repeatedly flooded	✓	

		and collect information on past insurance claims. At a minimum, describe repetitive loss neighborhoods or areas in the plan. For a discussion on identifying vulnerable structures and detailed inventories, see *Understanding Your Risks* (FEMA 386-2), Step 3, Worksheet #3a and #3b, Inventory Assets.		
B. Does the plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Hazard Analysis P. 3 - 17	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** Future development is not described in terms of types and numbers of buildings, infrastructure, or critical facilities. **Recommended Revisions:** • Identify the type and number of **future** buildings, infrastructure, and critical facilities within each hazard area. **Additional Suggestions:** • Identify the types of buildings (e.g., residential, commercial, institutional, recreational, industrial, and municipal buildings); infrastructure, (e.g., roadways, bridges, utilities, and communications systems); and critical facilities (e.g., shelters, hospitals, police, and fire stations). • Information on proposed buildings, infrastructure, and critical facilities, including planned and approved development, may be based on information in the comprehensive or land use plan and zoning maps. • Identify buildings, infrastructure, and critical facilities that are vulnerable to more than one hazard. • Describe the process or method used for identifying future buildings, infrastructure, and critical facilities. • Note any data limitations for determining the type and numbers of future buildings, infrastructure, and critical facilities and include in the mitigation strategy actions for collecting the data to improve future vulnerability assessment efforts. For a discussion on identifying vulnerable structures and	✓	

		detailed inventories, see *Understanding Your Risks* (FEMA 386-2), Step 3, Worksheet #3a and #3b, Inventory Assets.		
		SUMMARY SCORE	✓	

Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): *[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate … .*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan estimate **potential dollar losses** to vulnerable structures?	Hazard Analysis P. 3 - 17	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** The plan provides an estimate for a flash flood event (P. 4), but does not provide an estimate of the potential dollar losses for the areas affected by flash flooding. For all other hazards, there is an asset inventory (P. 19) showing the value of all assets in the jurisdiction, but no estimate of how much might be affected by any of the listed hazards. **Recommended Revisions:** • Describe vulnerability in terms of potential dollar losses. **Additional Suggestions:** • Provide an estimate for each identified hazard. • Include, when resources permit, estimates for structure, contents, and function losses to present a full picture of the total loss for each building, infrastructure, and critical facility. • Select the most likely event for each identified hazard (e.g., 100-year flood) and estimate the likely losses associated with this event. • Include a composite loss map to locate high potential loss areas to help the jurisdiction focus its mitigation priorities. • Note any data limitations for estimating losses and include in the mitigation strategy actions for collecting the data to improve future loss estimate efforts.	✓	

		For a step-by-step method for estimating losses, see *Understanding Your Risks* (FEMA 386-2), Step 4.		
B. Does the plan describe the **methodology** used to prepare the estimate?	Not in the Plan	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** No estimate is included. **Recommended Revisions:** • Describe the methodology used to estimate losses. For a step-by-step method for estimating losses, see *Understanding Your Risks* (FEMA 386-2), Step 4.	✓	
		SUMMARY SCORE	✓	

Assessing Vulnerability: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): *[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe land uses and development trends?	Not in the Plan	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** No discussion of land use and development trends was found. **Recommended Revisions:** • Provide a general overview of land uses (e.g., location and kind of use). • Describe development trends occurring within the jurisdiction (e.g., describe the types of development occurring, location, expected intensity, and pace by land use). **Additional Suggestions:** • Describe existing land use and densities in the identified hazard areas. Provide a map showing land use. • Describe future land use density. Such information may be	✓	

		obtained from your regional or local planning office, comprehensive plan, or zoning maps. Future development information helps to define appropriate mitigation approaches, and the locations in which these approaches should be applied. This information can also be used reduce development in hazard areas. • Overlay a land use map with identified hazard areas. • Note any data limitations for determining development trends and include in the mitigation strategy actions for collecting the data to complete and improve future vulnerability assessment efforts.		
			SUMMARY SCORE	✓	

Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): *For multi-jurisdictional plans, the risk assessment* ***must*** *assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?				
		SUMMARY SCORE	N/A	N/A

Unit 4: Local Plan Review Working Session – Mitigation Strategy

Mitigation Strategy

What is the purpose of this portion of the Plan Review Requirements?

The main point of the plan is to come up with a coherent strategy to address the relevant risks for the community.

Mitigation Strategy

IFR Requirement: § 201.6 (c) (3) (i) Local Hazard Mitigation Goals (1 of 4)

A. Does the plan include a description of mitigation goals to reduce or avoid long term vulnerability to the identified hazards?

Key Words and Issues

the connection between the goals (and objectives) and the results of the risk assessment, i.e., "the identified hazards" is not always immediately apparent – including hazards that are identified, profiled and assessed but do not show up in the goals and goals that speak to issues that were not heretofore identified

Mitigation Strategy

IFR Requirement:
§ 201.6 (c) (3) (ii) Identification and Analysis of Mitigation Actions (2 of 4)

A. Does the plan identify and analyze a comprehensive range of mitigation actions and projects for each hazard?

Key Words and Issues

the original intent was for communities to analyze all mitigation options, i.e., "**a comprehensive range**", for each identified problem hazard and/or area – most plans do not include anything more than a solitary action that is selected for a specific problem

Mitigation Strategy

IFR Requirement:
§ 201.6 (c) (3) (ii) Identification and Analysis of Mitigation Actions (2 of 4 continued)

B. Do the identified action and projects address reducing the effects of each hazard on new buildings and infrastructure?

C. Do the identified actions and projects address reducing the effects of each hazard on existing buildings and infrastructure?

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Mitigation Strategy

IFR Requirement:
§ 201.6 (c) (3) (iii) Implementation of Mitigation Actions (3 of 4)

A. Does the mitigation strategy include how actions are prioritized?

Key Words and Issues

strategies for determining "**prioritized**" actions range from application of decision making tools such as STAPLEE to develop scores and ranks; to assigning a sense of urgency (high, medium, low); to simply listing actions in the chronological order the community expects to implement them

FEMA

Mitigation Strategy

IFR Requirement:
§ 201.6 (c) (3) (iii) Implementation of Mitigation Actions (3 of 4)

B. Does the mitigation strategy address how the actions will be implemented and administered?

C. Does the prioritization process include an emphasis on the use of cost - benefit review to maximize benefits?

Key Words and Issues

"**implemented and administered**" imply that responsible parties "should" be identified but this cannot necessarily be required based on the Rule language

"**cost-benefit review**" can be interpreted as any process that takes into account relative or general cost and benefit relationships and does not require the application of tools like the benefit-cost module

FEMA

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Mitigation Strategy

IFR Requirement:
§ 201.6 (c) (3) (iv) Multi-Jurisdictional Mitigation Actions (4 of 4)

A. Does the plan include at least one identifiable action item for each jurisdiction requesting FEMA approval of the plan?

Key Words and Issues

mitigation actions that affect an entire planning area can be applied to the requirement of "**at least one identifiable action item**"

(this leads to a similar "what if" scenario as IFR Requirement: § 201.6 (c) (5) Multi-Jurisdictional Plan Adoption (slide 37))

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Small Group Working Session – Mitigation Strategy

This session covers the bottom of page 7 through the top of page 9 of the Crosswalk.

The end product is a completed plan review of the Mitigation Strategy for the City of Darwin, Iowa plan.

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Small Group Results

Mitigation Strategy

Element	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
§ 201.6 (c) (3) (i) Local Hazard Mitigation Goals										
A. Description of mitigation goals										
§ 201.6 (c) (3) (ii) Identification and Analysis of Mitigation Actions										
A. Comprehensive list of mitigation actions identified and analyzed										
B. Identified actions address new buildings										
C. Identified actions address existing buildings										
§ 201.6 (c) (3) (iii) Implementation of Mitigation Actions										
A. Description of how actions were prioritized (including the process and criteria used)										
B. Description of how cost and benefits were considered during the prioritization process										
C. Description of how actions will be implemented and administered										

FEMA

MITIGATION GOALS AND AL TERNATIVES
CONTENTS

MITIGATION GOALS - ALTERNATIVES

Mitigation Goals

The Hazard Mitigation Planning Committee established the following goals to make their community more disaster resistant.

- Minimize injuries and loss of life
- Reduce or eliminate damages due to natural disasters
- Manage response operations with or without State and Federal Assistance
- Return to pre-disaster conditions in a timely and pre-planned manner

Accomplishing these goals requires an integrated emergency management program, including:

> Preparedness activities ensure the community and its residents are ready for a disaster and that they respond effectively. Preparedness involves determining what the community will do if essential services break down, developing a plan for contingencies, and practicing the plan.
>
> Response activities begin as soon as the disaster threatens. Response includes access control, search and rescue, mass care, medical services, and restoring essential services.
>
> Recovery activities help the community to return to pre-disaster condition. They include rebuilding services, infrastructure (utilities, communications, and transportation systems), facilities, operations, and the lives affected by the disaster.
>
> Mitigation activities are sustained actions that reduce the long-term risk of disasters. They reduce threats to the public health and safety, reduce or eliminate damages caused by disaster, and reduce the burden placed on local, state, and federal preparedness, response and recovery activities.

Mitigation Alternatives

The Committee focused on mitigation activities that would minimize injuries and loss of life and reduce or eliminate damages due to natural disasters. They identified a wide range of mitigation approaches and, based on the hazard analysis and risk assessment and the community's current mitigation activities, selected alternatives for further review and evaluation. Following their review and evaluation of the alternatives, the Committee selected and prioritized actions they felt should be implemented.

The following sections summarize the mitigation segment of the planning process:

- Current Mitigation Activities
- Mitigation Alternatives
- Mitigation Recommendations
- Mitigation Implementation

Current Mitigation Activities

1. Ordinances

   Tree Trimming ordinances reduce damages from trees and tree branches damaged during ice storms or by heavy winds.

   Snow Removal ordinances ensure streets are cleared promptly and provide emergency access to the citizens.

2. Emergency Service

   Fire

   The Darwin Volunteer Rural Fire and Ambulance Service provides primary fire protection. Darwin's fire insurance class is (8). Additional protection is provided through Mutual Aid Agreements with communities in Beagle County.

   Emergency Management

   The Beagle County Emergency Management Coordinator's office is located in Newton. The County Emergency Management Coordinator works in conjunction with all community fire, rescue, police, and government officials to ensure community emergency mitigation, preparedness, and response and recovery plans are current and to assist community's implementation of these plans.

   The City adopted the Multi-Hazard Emergency Operations Plan in December 2000. The Major will coordinate emergency operations within the City.

   Medical Services

   Skiff Medical Center is a 68-bed primary care hospital located in Newton, Iowa. Accredited by the Joint Commission on Accreditation of Healthcare Organizations, the hospital is an active member in Beagle County. Additional medical services are available from the Pella Regional Health Center in Pella, Iowa, the Grinnell Regional Medical Center in Grinnell, Iowa and Des Moines, Iowa medical facilities.

   Additional emergency medical services are available through Mutual Aid Agreements with Beagle County communities.

Warning Systems

The City of Darwin warning siren system provides coverage to the entire community. However, atmospheric conditions can impact the coverage. In accordance with the City's emergency procedures, the Fire Department warns neighborhoods of severe weather and other emergency situations and ensures vulnerable segments of the community receive notification. NOAA Weather Radio and television and radio announcements provide emergency warning for the community.

Storm Spotters

The City participates in the Storm Spotter program. Storm spotters take a position near their communities and report wind gusts, hail size, rainfall, and cloud formations that could signal a developing tornado. Spotter information is relayed to County and City Emergency Management and to the National Weather Service.

Shelter and Feeding Sites

The Red Cross coordinates shelter and feeding emergency needs. City churches and the schools serve as shelter and feeding sites.

Sewer System Maintenance Program

The City conducts smoke tests and camera inspections to identify vulnerable areas in the system and has implemented a maintenance program to clean and inspect vulnerable portions of the system. Inspecting and maintaining vulnerable portions of the system reduces sewer inflow/infiltration.

Alternatives Considered

Flood Mitigation

1. Public information
2. Storm water drainage ordinances
3. Sewer Maintenance Program

Tornado-High Winds

1. Improve public awareness of tornado and high wind risks, safe rooms, wind construction methods, safe zones around homes, and NOAA weather radio warning system
3. Assess current warning siren system.
4. Provide NOAA weather radios at reduced cost
5. Trim trees to reduce wind damages

Thunderstorms - Lightning and Hail

1. Trim dead or weak branches from trees
2. Improve public awareness of lightning and hail risk, measures that can be taken to reduce risk (i.e., trimming trees, purchasing generators) and community warning systems (sirens and NOAA weather radio).

Hazardous Materials

1. Increase public awareness about hazardous materials risk.
2. Continue hazardous materials preparedness and response and recovery activities such as support of LEPC, review and update of response and recover plans, evacuation routes, and community shelters.

Earthquake

1. Increase public awareness of earthquake threat and NOAA weather radio

Winter Storms

1. Increase public awareness of winter storm hazards and risks and measures they can take to reduce risks, including weatherizing homes, protecting pipes from freezing, and recommended snow load building standards.
2. Promote NOAA weather radios.
3. Establish tree-trimming programs.
4. Identify vulnerable populations who may require special assistance.

Drought

1. Establish burn restrictions and water conservation measures for localized drought conditions.
2. Increase public awareness of drought risks and measures the public can take to reduce the risk.

Flood Mitigation

Public Information. Educating the public about their hazard risks and ways to reduce the risks is one of the most cost effective mitigation alternatives. Many materials are available free of charge, or at a minimal cost, from FEMA, the Institute of Business and Home Safety, and insurance companies.

The planning Committee felt that the current flood and flash flood information provided through county emergency management weather awareness efforts meets the needs of their community.

Storm Water Drainage Ordinances

The City currently enforces ordinances that prevent homeowners from typing their residential drainage system—gutters, down spouts and pump sumps—into the City's sanitary sewer system.

The Committee recommends continuing to enforce storm water drainage ordinances.

Sanitary Sewer System Maintenance Program

The City conducts smoke tests and camera inspections to identify vulnerable areas in the system and has implemented a maintenance program to clean and inspect vulnerable portions of the system. Inspecting and maintaining vulnerable portions of the system reduces sewer inflow/infiltration.

The Committee recommends continuing the sanitary sewer system maintenance program.

Tornado-High Winds

Improve public awareness of tornado and high wind risks safe rooms, wind construction methods, safe zones around homes and NOAA weather radio warning system

The Committee reviewed several measures that can reduce damages and the risk of damages and also reduce threats to residents' safety. These measures ranged from clearing the area of objects that could become flying projectiles (gravel driveways, trees and other objects that could fall or be uprooted) to installing "hurricane" clips. Studies have shown that the effectiveness of any warning system is the public taking the appropriate action once emergency warnings have been issued. Therefore, an important component of any educational program would be increasing the public awareness of the City's current warning system.

The Committee recommends working with the County Emergency Manager (who has educational

materials and implements annual educational projects) and ordering free/low-cost materials from

FEMA, the Institute of Business and Home Safety, insurance companies, Red Cross, etc. to place in public places, for example where City Council meetings are held and in schools

Assess Current Warning Siren System

The City's emergency warning system consists of several components including sirens, notification by the fire department, radio and television warnings, and NOAA Weather Radio. Warning sirens provide coverage throughout the community. However atmospheric conditions can impact the signal coverage. The cost of replacing or adding sirens is approximately $12.00 per siren.

The Committee's primary concern is ensuring that the citizens are protected through an efficient, effective, and cost-effective warning system. The Committee agreed that the before recommending the purchase of additional warning sirens, the City staff, with the assistance of the county emergency management coordinator, should review the effectiveness of the current warning system.

Provide NOAA weather radios at reduced cost

The entire county has NOAA weather radio coverage. NOAA weather radios transmit advance warning of all hazards and can be used by the County Emergency Management Coordinator to warn residents of other emergencies. Several features are also available for hearing impaired.

The Committee agreed providing NOAA weather radio receivers at 25% of their regular cost would be a cost effective warning alternative. The Committee's first priority would be to ensure NOAA weather radio receivers are made available to all public facilities, schools, businesses, and clinics. Once this is accomplished, the Committee's recommendation is to make the receivers available to all households in the community

Trim trees to reduce wind damages

The community currently has a tree-trimming ordinance. The Committee agreed that continuing to enforce the ordinance was an effective way of reducing property damage and protecting the citizens.

Thunderstorms- Lightning and Hail

Trim dead or weak branches from trees

The community currently has a tree-trimming ordinance.

The Committee agreed that continuing to enforce the ordinance was an effective way of reducing property damage and protecting the citizens.

Improve public awareness of lightning and hail risk measures that can be taken to reduce risk (i.e. trimming trees purchasing generators and community warning systems sirens and NOAA weather radio).

Improving public awareness about hazard risks and measures the public can take to protect themselves and their property is a cost-effective method of reducing those risks.

The Committee recommends working with the County Emergency Manager (who has educational materials and implements annual educational projects) and ordering free/low-cost materials from FEMA, the Institute of Business and Home Safety, insurance companies, Red Cross, etc. to place in public places, for example where City Council meetings are held and in schools.

Hazardous Materials

Increase public awareness about hazardous materials risk.

Improving public awareness about hazard risks and measures the public can take to protect themselves and their property is a cost-effective method of reducing those risks. The Committee agreed it was particularly important that people understand the risks from hazards commonly found in the home. The City has an area in the lobby of City Hall set aside for displaying information about building permits, ordinance requirements, and other items of interest to its citizens. Information regarding hazardous materials risk and measures the public can take to protect themselves and their community is available.

The Committee feels the City is doing a good job of informing the public of risks and protective measures they can take and recommends continuing the practice of placing information in the Lobby of City Hall.

Continue hazardous materials preparedness and response and recovery activities such as support of LEPC. review and update of response and recover plans, evacuation routes, and community shelters.

The Superfund Amendments and Reauthorization Act (SARA) of 1986. Title III of this legislation requires establishing a Local Emergency Planning Committee (LEPC) to be responsible for developing an emergency plan for preparing for and responding to chemical emergencies in that community. The County LEPC represents all incorporated and unincorporated communities within Beagle County.

This emergency plan includes: an identification of local facilities and transportation routes where hazardous material are present; procedures for immediate response in case of an accident (including a community-wide evacuation plan); a plan for notifying the community that an incident has occurred; the names of response coordinators at local facilities; and a plan for conducting exercises to test the plan. The Beagle County LEPC is required to review, test, and update the plan each year.

The LEPC's effectiveness depends on the support it receives from communities within the County, the EMC, and the public. Without this support the County may be able to meet the minimum legal requirements, but the actual affect of the LEPC will be minimal.

The Committee recommends continuing to support the LEPC and its emergency planning efforts.

Earthquake

Increase public awareness of earthquake threat and NOAA weather radio

Improving public awareness about hazard risks and measures the public can take to protect themselves and their property is a cost-effective method of reducing those risks. However, the

Committee decided that because of the low risk of an earthquake and the limited damages that would occur in Seismic Zone o, the City's limited resources should be targeted toward hazards that pose a greater threat to the community.

Winter Storms

Increase public awareness of winter storm hazards and risks and measures the can take to reduce risks including weatherizing homes protecting pipes from freezing and recommended snow load building standards.

Improving public awareness about hazard risks and measures the public can take to protect themselves and their property is a cost-effective method of reducing those risks. The County

Emergency Management Coordinator's officer current conducts public awareness programs for the entire County, including Darwin. The Committee felt that the majority of their citizens were long-time residents of the area and well informed about winter storm hazards and preparedness and mitigation measures such as insulating and winterizing the home.

The Committee decided that the current County efforts meet the needs of their citizens and that community resources would be more effectively spent on other educational programs.

Provide NOAA weather radios at reduced cost

The entire county has NOAA weather radio coverage. NOAA weather radios transmit advance warning of all hazards and can be used by the County Emergency Management Coordinator to warn residents of other emergencies. Several features are also available for hearing impaired. Providing NOAA weather radio receivers at 25% of their regular cost would be a cost effective of ensuring warning coverage throughout the community.

The Committee recommends applying for funds to provide NOAA Weather Radios at reduced cost. The Committee's first priority would be to ensure NOAA weather radio receivers are made available to all public facilities, daycare facilities, businesses, and clinics. Once this is accomplished, the Committee's recommends making the receivers available to all households in the community.

Establish tree-trimming programs.

Trees growing too close to overhead electric wires may threaten the public's safety and cause power outages. The loss of power anytime during the year can lead to a critical situation, but the loss of power and heat during the winter is particularly dangerous. The community currently enforces a tree-trimming ordinance.

The Committee recommends continuing to enforce the current tree-trimming ordinance.

Drought

Severe Drought

The Committee reviewed the hazard and risk information and concluded that because of the widespread nature of droughts and the low probability of a severe drought; focal level drought mitigation measures would not be effective against severe drought.

Local Drought

The City currently implements water conservation actions in the event of short-term events. The Committee felt that these measures were sufficient.

Establish burn restrictions and water conservation measures for localized drought conditions.

The City currently implements water conservation actions in the event of short-term events. The Committee felt that these measures were sufficient.

Increase public awareness of drought risks and measures the public can take to reduce the risk.

Improving public awareness about hazard risks and measures the public can take to protect themselves and their property is a cost-effective method of reducing those risks.

The Committee felt that drought information provided by local Department of Agriculture and ISU extension services meet the community public information needs.

Mitigation Recommendations

Darwin is a small community with limited resources. Therefore, the Committee decided that the community should focus its efforts on minimizing injuries and loss of life and reducing or eliminating damages due to natural hazards that poses the greatest degree of risk--Winter Storms, Tornados and Extreme Winds and on continuing current mitigation activities.

Recommendations

Priority 1, by rank

- Continue sanitary sewer maintenance program.
- Continue community storm spotter program.
- Improve public awareness of tornado and high wind risks, safe rooms, wind construction methods, safe zones around homes, and NOAA weather radio warning system
- Provide NOAA weather radios at reduced cost
- Continue to enforce Tree Trimming ordinances to reduce damages from trees and tree branches damaged during ice storms or by heavy winds.
- Continue to enforce Snow Removal ordinances ensure streets are cleared promptly and provide emergency access to the citizens of Darwin.
- Continue to implement Burn restrictions-Water Conservation policies to reduce the threat of fire during period of localized drought and to ensure an adequate water supply.

The Committee noted that NOAA weather radio, storm spotters, and public education activities mitigate risks from all hazards.

Priority 2, by rank

- Increase public awareness of hazardous materials risks in the home.
- Support LEPC and County Emergency Management hazardous materials preparedness, response, and recovery efforts.

Alternatives Funding Table

Alternative	Est. Cost	Federal Funds	State or County Funds	Local Funds	Feasibility	Comments
Continue sanitary sewer maintenance program	3,000			3,000	Good	Annual cost of 5-year contract.
Public awareness – tornado and extreme wind	100			100	Good	In addition to the County's public awareness program.
NOAA Receivers	27,810	20,857		6,953	Fair	Individual receiving radio will pay 25% local matches.
Continue enforcing Tree Trimming ordinance	200			200	Good	Enforce, review and revise.
Continue enforcing Snow Removal ordinance	200			200	Good	Enforce, review and revise. Does NOT include snow removal costs.
Continue enforcing Burn restrictions-Water Conservation policies	150			150	Good	Enforce, review and revise. Does NOT include snow removal costs.
Public awareness – hazardous household materials	100		75	25	Good	Coordinate with County Emergency Management.
Support LEPC	0				Good	No cost to community.

MITIGATION STRATEGY: *§201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

Local Hazard Mitigation Goals

Requirement §201.6(c)(3)(i): *[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards? (**GOALS** are long-term; represent what the community wants to achieve, such as "eliminate flood damage"; and are based on the risk assessment findings.)	Mitigation Goals and Alternatives P. 1	Goals are stated. **Recommended Revisions:** • Explain how the goals are intended to reduce or avoid vulnerability. • Describe how these goals were developed. The goals could be developed early in the planning process and refined based on the risk assessment findings, or developed entirely after the risk assessment is completed. They should also be compatible with the goals of the jurisdiction as expressed in other documents. • Although the Rule does not require a description of objectives, jurisdictions are highly encouraged to include objectives developed to achieve the goals so that the connection between goals, objectives, and mitigation actions is clear. For more information on developing local mitigation goals and objectives, see *Developing the Mitigation Plan* (FEMA 386-3), Step 1.		✓
		SUMMARY SCORE		✓

Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): *[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?	Mitigation Goals and Alternatives P. 3 - 9	**Recommended Revisions:** • If the plan identified data limitations in the risk assessment section, list actions to address the data limitations. For more details on identifying and evaluating mitigation actions, see *Developing the Mitigation Plan* (FEMA 386-3), Step 2.		✓
B Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?	Mitigation Goals and Alternatives P. 3 - 9	The plan does not include actions such as zoning ordinances and building codes that address hazards to new construction. **Required Revisions:** • Include actions that address **new** buildings and infrastructure. **Recommended Revisions:** • While the Rule does not specify critical facilities, the plan should also address new critical facilities. • Develop a matrix to show what actions address specific hazards and new buildings and infrastructure. For more details on identifying and evaluating mitigation actions, see *Developing the Mitigation Plan* (FEMA 386-3), Step 2.	✓	
C. Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?	Mitigation Goals and Alternatives P. 3 - 9	The actions include public information programs and enforcement that apply to existing buildings and infrastructure. **Recommended Revisions:** • While the Rule does not specify critical facilities, the plan should also address existing critical facilities. • Develop a matrix to show what actions address specific		✓

		hazards and existing buildings and infrastructure. For more details on identifying and evaluating mitigation actions, see *Developing the Mitigation Plan* (FEMA 386-3), Step 2.		
		SUMMARY SCORE	✓	

Implementation of Mitigation Actions

Requirement: §201.6(c)(3)(iii): *[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)	Mitigation Goals and Alternatives P. 9	There are two priority groupings, each with several actions. No discussion explains how priority actions were ranked. **Required Revisions:** • Describe the method for prioritizing actions. (In addition to cost benefit review, considerations may include social impact, technical feasibility, administrative capabilities, and political and legal effects, as well as environmental issues.) For a detailed description of the development of the mitigation strategy or action plan, see *Developing the Mitigation Plan* (FEMA 386-3), Step 3.	✓	
B. Does the mitigation strategy address how the actions will be **implemented and administered**? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)	Mitigation Goals and Alternatives P. 11	Eight of the ten actions are identified as "ongoing." There is no discussion regarding how the actions will be implemented or by whom they will be administered. **Required Revisions:** • Identify how the actions will be implemented and administered. Include in the description the responsible party(s)/agency(s), the funding source(s), and the target completion dates for each action. **Recommended Revisions:** • Include a cost estimate and/or resources required for each action, when possible.	✓	

		For a detailed description of the development of the mitigation strategy or action plan, see *Developing the Mitigation Plan* (FEMA 386-3), Step 3.		
C. Does the prioritization process include an emphasis on the use of a **cost-benefit review** (see page 3-36 of *Multi-Hazard Mitigation Planning Guidance*) to maximize benefits?		There is no cost-benefit review found in the plan. **Required Revisions:** • Describe the cost benefit review performed during the prioritization process to identify actions/projects with the greatest benefits. (If cost and benefit data are missing, a qualitative assessment of the comparative benefits will suffice.) For a detailed description of the development of the mitigation strategy or action plan, see *Developing the Mitigation Plan* (FEMA 386-3), Step 3; and *Mitigation Benefit Cost Analysis (BCA) Toolkit Compact Disc (CD)*.	✓	
		SUMMARY SCORE	✓	

Multi-Jurisdictional Mitigation Actions

Requirement §201.6(c)(3)(iv): *For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the plan include at least one identifiable **action item** for each jurisdiction requesting FEMA approval of the plan?				
		SUMMARY SCORE	N/A	N/A

Unit 5: Local Plan Review Working Session – Plan Maintenance Process

Plan Maintenance Process

What is the purpose of this portion of the Plan Review Requirements?

The DMA places high priority on the continuation of the planning process after the initial submittal.

In addition to the periodic need for the community to seek and receive re-approval from FEMA, the intent is to create a better institutional awareness and involvement in hazard mitigation as part of "regular" day-to-day activities.

Plan Maintenance Process

IFR Requirement:
§ 201.6 (c) (4) (i) Monitoring, Evaluating, and Updating the Plan (1 of 3)

Does the plan describe the method, schedule, and responsible agency for

A. monitoring /

B. evaluating /

C. updating

the plan?

"responsible agency" is "implied" but not "specified"

"monitoring" versus **"evaluating"** definitions should be consistent with the Planning Guidance

Plan Maintenance Process

IFR Requirement:
§ 201.6 (c) (4) (ii) Implementation Through Existing Programs (2 of 3)

A. Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?

B. Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?

how will the reviewer know if the community is accurately depicting the "**other local planning mechanisms**" for incorporating the mitigation plan recommendations if none or only a few are identified in the plan

Plan Maintenance Process

IFR Requirement: § 201.6 (c) (4) (iii) Continued Public Involvement (3 of 3)

A. Does the plan explain how continued public participation will be obtained?

if earlier documentation suggests that public participation efforts were not successful during the plan, is that acknowledged in proposed "**continued public participation**" measures will work?

Small Group Working Session – Plan Maintenance Process

This session covers the bottom of page 9 through page 10 of the Crosswalk.

The end product is a completed plan review of the Plan Maintenance Process for the City of Darwin, Iowa plan.

Small Group Results

Plan Maintenance Process

Element	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
§ 201.6 (c) (4) (i) Monitoring, Evaluating, and Updating the Plan										
A. Method and schedule for monitoring the plan										
B. Method and schedule for evaluating the plan										
C. Method and schedule for updating the plan within a 5 year cycle										
§ 201.6 (c) (4) (ii) Incorporation into Existing Planning Mechanisms										
A. Other planning mechanisms for incorporating the requirements of the mitigation plan identified										
§ 201.6 (c) (4) (iii) Continued Public Involvement										
A. Continued public involvement explained										

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Implementation

Priorities

1. Continue sanitary sewer maintenance program. (Continuing)
2. Improve public awareness of tornado and high wind risks, safe rooms, safe zones around homes, and NOAA weather radio warning system. (Short-term)
3. Provide NOAA weather radio receivers at reduced cost (Short-term)
4. Continue to enforce Tree Trimming ordinance to reduce damages from trees and tree branches damaged during ice storms or by heavy winds. (Continuing)
5. Continue to enforce Snow Removal ordinances to ensure streets are cleared promptly and provide emergency access to residents. (Continuing)
6. Continue to enforce Burn restrictions-Water Conservation policies to reduce the threat of fire during period of localized drought and to ensure an adequate water supply. (Continuing)
7. Increase public awareness of hazardous household materials by supplementing County program. (Continuing)
8. Support LEPC and County Emergency Management hazardous materials preparedness, response, and recovery efforts. (Continuing)

Phasing

Phasing is a budgetary responsibility of the City Council who will review the projects annually. For projects that require a local match commitment, the Council should begin setting aside appropriate resources to meet their match liability.

Integration into other planning mechanisms

The community does not have a comprehensive plan. The City uses the Zoning and Subdivision Ordinances to guide development within the City. The Zoning Administrator, Planning & Zoning Commission, and Board of Adjustments review and oversee zoning throughout the city. The Mayor and Council monitor development and the effectiveness of ordinances and will continue to do so following adoption of the Mitigation Plan. These activities will be incorporated into the Plan Evaluation and Review Process.

Responsibility

The Council and their designees are responsible for implementing, reviewing, evaluating and updating the plan.

Review Schedule

Progress will be reviewed and evaluated on an annual basis. Plan will be reviewed annually and updated as needed.

Evaluation And Review Process

The Planning Committee (Mayor, City Council, City Clerk, and Public Works Supervisor) will review and evaluate progress on the Mitigation Plan. The City Clerk will invite the director of the City Economic Development Committee to participate as member of the Planning Committee's and/or to review the Plan and provide comments.

MITIGATION PLAN EVALUATION

Mitigation Recommendation Number: _____

Annual Review

September 2003_____
September 2004_____
September 2005_____
September 2006_____
September 2007_____

Statement of Progress

Community Profile, Hazard, Risk Assessment Evaluation/Changes

Finding - Recommendation

PLAN MAINTENANCE PROCESS

Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): *[The plan maintenance process* ***shall*** *include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe the method and schedule for **monitoring** the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)	Mitigation Goals and Alternatives P. 11, 12	Although the plan indicates that it will be reviewed on an annual basis, it is not clear that this review will include monitoring of mitigation actions. Review of the plan is not necessarily the same as monitoring of the plan. **Required Revisions:** • Include a description of the method and schedule to **monitor** the plan. Include in the description the party(s)/agency(s) responsible for ensuring that the monitoring process is accomplished, and how and when the plan will be monitored. **Recommended Revisions:** • Monitoring may include periodic reports by agencies involved in implementing actions; parameters to measure the progress of the actions; and action completion dates. For guidance on monitoring the plan, see *Bringing the Plan to Life* (FEMA 386-4), Step 2.	✓	
B. Does the plan describe the method and schedule for **evaluating** the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)	Mitigation Goals and Alternatives P. 11, 12	**Recommended Revisions:** • The evaluation should assess whether goals and objectives address current and expected conditions; nature or magnitude of risks has changed; current resources are appropriate for implementing the plan; outcomes have occurred as expected; and agencies and other partners participated as originally proposed. For guidance on evaluating the plan, see *Bringing the Plan to Life* (FEMA 386-4), Step 3.		✓
C. Does the plan describe the method and schedule for **updating** the plan within the five-year cycle?	Mitigation Goals and Alternatives	The plan calls for annual reviews and updating as needed – which the reviewer accepts as meeting the requirement for a		✓

	P. 11	five-year cycle update. **Recommended Revisions:** • Allow ample time for the review and adoption process to ensure the plan is adopted within the five-year cycle. For guidance on updating the plan, see *Bringing the Plan to Life* (FEMA 386-4), Step 4.		
			SUMMARY SCORE	✓	

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): *[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?	Mitigation Goals and Alternatives P. 11	**Recommended Revisions:** • Prepare a matrix showing the range of other planning mechanisms and identify which apply to each action. For more information on integrating hazard mitigation activities in other initiatives, see *Bringing the Plan to Life* (FEMA 386-4), Step 2.		✓
B. Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?	Mitigation Goals and Alternatives P. 11	There is no explicit language to indicate that this plan will be "incorporated" into any of the cited other mechanisms. **Required Revisions:** • Describe the process to incorporate the mitigation plan requirements into local planning mechanisms. For more information on integrating hazard mitigation activities in other initiatives, see *Bringing the Plan to Life* (FEMA 386-4), Step 2.	✓	
		SUMMARY SCORE	✓	

Continued Public Involvement

Requirement §201.6(c)(4)(iii): *[The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.*

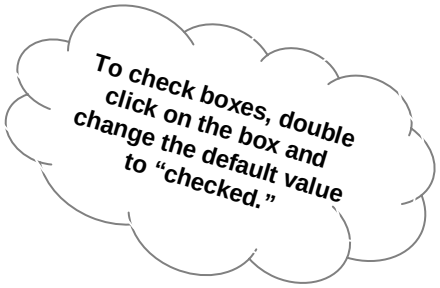
Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	Mitigation Goals and Alternatives P. 11	The plan does not provide information about how the public and interested groups will be involved in the maintenance of the plan. **Required Revisions:** • Describe public participation opportunities that the community will have during the plan's monitoring, evaluation, and updates (e.g., soliciting input, holding meetings, posting the proposed changes to the plan on the Web, etc.). **Recommended Revisions:** • Include a schedule for public participation opportunities, who will be responsible for organizing events, who will maintain the Web site, etc. • Explain how and when public comments will be integrated into the plan updates. For more information on keeping the public involved, see *Getting Started* (FEMA 386-1), Step 3 and *Bringing the Plan to Life* (FEMA 386-4), Steps 2 and 3.	✓	
		SUMMARY SCORE	✓	

Matrix A: Profiling Hazards

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required**.

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes	N	S	N	S	N	S	N	S
Avalanche	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Erosion	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐	☐	☐	☐	☐
Expansive Soils	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tsunami	☐	☐	☐	☐	☐	☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐	☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐



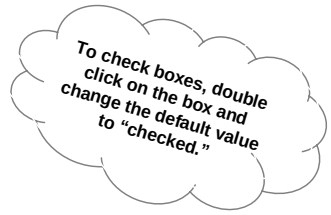
Legend:
§201.6(c)(2)(i) Profiling Hazards
A. Does the risk assessment identify the location (i.e., geographic area affected) of each hazard addressed in the plan?
B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the plan?
C. Does the plan provide information on previous occurrences of each natural hazard addressed in the plan?
D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the plan?

Matrix B: Assessing Vulnerability

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each requirement. **Completing the matrix is not required**.

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Note: Receiving an N in the shaded columns will not preclude the plan from passing.



Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	§201.6(c)(2)(ii) Assessing Vulnerability: Overview					§201.6(c)(2)(ii) Assessing Vulnerability: Identifying Structures				§201.6(c)(2)(ii) Assessing Vulnerability: Estimating Potential Losses					
		A. Overall Summary Description of Vulnerability		B. Hazard Impact			A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)		A. Loss Estimate		B. Methodology			
	Yes	N	S	N	S		N	S	N	S	N	S	N	S		
Avalanche	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Coastal Erosion	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Coastal Storm	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Dam Failure	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Drought	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Earthquake	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Expansive Soils	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Extreme Heat	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Flood	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Hailstorm	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Hurricane	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Land Subsidence	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Landslide	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Severe Winter Storm	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Tornado	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Tsunami	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Volcano	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Wildfire	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Windstorm	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Other _____	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Other _____	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Other _____	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		

Legend:

§201.6(c)(2)(ii) Assessing Vulnerability: Overview

A. Does the plan include an overall summary description of the jurisdiction's vulnerability to each hazard?

B. Does the plan address the impact of each hazard on the jurisdiction?

§201.6(c)(2)(ii)(A) Assessing Vulnerability: Identifying Structures

A. Does the plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?

B. Does the plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

§201.6(c)(2)(ii)(B) Assessing Vulnerability: Estimating Potential Losses

A. Does the plan estimate potential dollar losses to vulnerable structures?

B. Does the plan describe the methodology used to prepare the estimate?

Matrix C: Identification and Analysis of Mitigation Actions

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Comprehensive Range of Actions and Projects	
	Yes	N	S
Avalanche	☐	☐	☐
Coastal Erosion	☐	☐	☐
Coastal Storm	☐	☐	☐
Dam Failure	☐	☐	☐
Drought	☐	☐	☐
Earthquake	☐	☐	☐
Expansive Soils	☐	☐	☐
Extreme Heat	☐	☐	☐
Flood	☐	☐	☐
Hailstorm	☐	☐	☐
Hurricane	☐	☐	☐
Land Subsidence	☐	☐	☐
Landslide	☐	☐	☐
Severe Winter Storm	☐	☐	☐
Tornado	☐	☐	☐
Tsunami	☐	☐	☐
Volcano	☐	☐	☐
Wildfire	☐	☐	☐
Windstorm	☐	☐	☐
Other _____	☐	☐	☐
Other _____	☐	☐	☐
Other _____	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

Legend:
§201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions
A. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?

Unit 6: Multi-Jurisdictional Plan Reviews

Multi-Jurisdictional Plan Reviews

Key Words and Issues

"**multi-jurisdictional**" plans take many forms – from true regional plans with global priorities to collections of what are essentially all local level plans

"**participation**" can be met through "adoption" only if all opportunities are available and the adopting communit(ies) are not coerced

Available Resources

Multi-Hazard Mitigation Planning Guidance

Unit 7: State and Tribal Plan Reviews

State and Tribal Plan Reviews

Key Words and Issues

Timing is "off for integration of local and state planning efforts (for this round

"**enhanced**" plans do **not** mean bigger and better "**standard**" plans

"**enhanced state program certification process**"

tribal governments can submit as local, state or both

Available Resources

Multi-Hazard Mitigation Planning Guidance

Unit 8: Manmade Hazard Mitigation Planning

Manmade Hazard Mitigation Planning

Key Words and Issues

"**manmade**" hazards are not included (for now) as primary hazards but often need to be accounted for as a secondary effect of natural hazard events (e.g., the nuclear reactor on the earthquake fault line or the refinery in the floodplain)

Available Resources

How-to #7

FEMA Antiterrorism website

Unit 8:
Manmade Hazard Considerations

Required? No.

Recommended? Maybe…

- Where might manmade hazards show up in plans?

Local expectations

- Value of awareness

FEMA

Manmade Hazard Considerations

Technical assistance

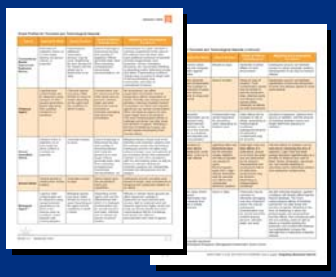
- In-house
- FEMA guidance

http://www.fema.gov/fima/antiterrorism

http://www.fema.gov/fima/rmsp.shtm

FEMA

Manmade Hazard Considerations



pp. 2-5 and 2-6

pp. 3-4 and 3-5

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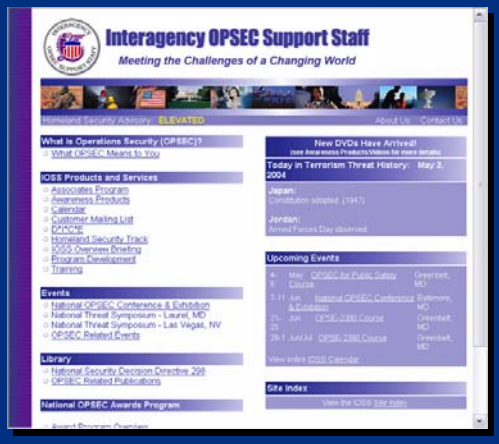
Manmade Hazard Considerations

Information sensitivity

- Legal aspects
- Public Participation
- Handling practices
- Reality check



http://www.ioss.gov

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Unit 9: Odds and Ends

Odds and Ends

Questions regarding situations the Region staff have already encountered (regional differences? confidentiality?, capability assessments?)

Techniques for consistency in plan reviews

- the “buddy” system
- individuals filling consistent roles (one person reviews all the planning process sections, etc.)
- support via FEMA HQ such as FAQ’s

NEMIS and the Plan Repository

Final Rule development and the contributions plan reviewers can make

Odds and Ends

What happens after November 1, 2004? in terms of:

- monitoring implementation of the plan's recommendations (including addressing data deficiencies)
- references to plans in post-disaster situations where the plans have been changed and/or updated but not resubmitted to FEMA
- updating plans during and/or at the end of the regulatory time limits (3 years for States and 5 years for local communities

Planning Guidance versus Interim Criteria: can both be used or has the Planning Guidance superceded and completely replaced the Interim Criteria?

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Unit 10: Exercise – Plan Review Comments and Plan Revisions

Exercise – Plan Review Comments and Plan Revisions

This exercise involves:

- **reviewing a short excerpt of a plan;**
- **trading reviews with another group who will craft a response to your review** (in the form of a revised plan excerpt) **while your group responds to their comments; and**
- **returning the revised plan excerpts so both groups can see if their review comments yielded the desired results**

Plan Review Comments

Rules of Thumb:

1. When you score an element with an “N”, make sure you have clearly articulated the deficiency. Although you will provide a description of Required Revisions, this initial statement can unambiguously focus both you and the community on the specific issues to be addressed.

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Plan Review Comments

For example:

Under § 201.6 (c) (2) (ii) (A) Assessing Vulnerability: Identifying Structures, the Element says:

A. Does the plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?

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Plan Review Comments

In reviewing this element for the Darwin plan, one group wrote:

Reviewer: "Each individual hazard discussion provides an assessment of vulnerability to existing structures in the affected area."

…and then scored the Element with an "N".

If I am the local planner, how am I supposed to revise my plan to change the "N" to an "S"?

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Plan Review Comments

Rules of Thumb:

2. When you write either Required and Recommended Revisions, make sure it is clear what you want the community to do to either fix the actual deficiency (Required) or to attain a better planning product (Recommended).

   To an extent, these statements can be mirror images of the statements regarding the deficiency. However, avoid asking questions that do not lead to an actual revision of the plan.

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Plan Review Comments

For example:

Under § 201.6 (c) (2) (ii) Assessing Vulnerability: Overview, the second Element says:

B. Does the plan address the impact of each hazard on the jurisdiction?

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Plan Review Comments

In reviewing this element for the Darwin plan, one group wrote (under Recommended Revisions):

Reviewer: "The discussion for tornado/extreme wind includes a discussion of the Community Center, housing, City Hall and the EOC. This is the only section where the discussion of impacts to a critical facility is included.

Is tornado the only disaster potentially taking the EOC out of service? And what are the impacts of eliminating essential services for an extended period of time?"

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Plan Review Comments

The response to these "recommended revisions" could be as follows:

Reviewer: "Is tornado the only disaster potentially taking the EOC out of service?"

Community: "No".

Reviewer: "And what are the impacts of eliminating essential services for an extended period of time?"

Community: "Undesirable".

Plan Review Comments

One way these comments could have resulted in a better response is:

Reviewer: "Is tornado the only disaster potentially taking the EOC out of service?" If there are other disasters that could affect the EOC or other critical facilities, you should identify them in the plan.

Reviewer: "And what are the impacts of eliminating essential services for an extended period of time? You should state these impacts in terms of numbers of people potentially directly affected by property losses, the amount of business revenue (and related tax revenues) that could be lost on a daily basis in the affected areas, etc."

Plan Review Comments

Rules of Thumb:

3. When you want to mix Required and Recommended Revisions, segregate the statements you are making about the deficiencies and your "desires". Some are directly related to the Rule and some are a result of what you would like them to do over and above the minimum.

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Plan Review Comments

It can work to show comments as follows (for an Element that gets an "N" score):

Statement of what is actually deficient in the plan relative to the Rule – only identify the issues that are keeping the plan from getting an "N".

Required Revisions

Statement of what is needed to address the deficiencies.

Recommended Revisions

Statement of what else you would have liked to have seen.

Statement of what you are recommending the community consider as additional improvements to the plan.

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Plan Review Comments

This type of format for the Recommended Revisions can also work for Elements that get an "S" but did not "reach the heights", i.e.,

Recommended Revisions

Statement of what else you would have liked to have seen (which can be proceeded with a "pat on the back" for what they did to deserve the "S").

Statement of what you are recommending the community consider as additional improvements to the plan.

Plan Review Comments

Rules of Thumb:

4. When you write Recommended Revisions, regardless if it is for a "N" or an "S" element, it would be helpful to the community to get a sense of your expectation regarding when it would be appropriate to make this type of revision, i.e., do you think it is best to undertake this type of revision as part of the current planning cycle or during the next five year planning cycle.

Plan Review Comments

Rule of Pinkie:

5. Whole Sentences.

   It is not always clear what is meant by sentence fragments.

   For example, does the following statement belong to an “N” or an “S” score:

   Reviewer: “Community participation in the identification of hazards.”

Unit 11: Course Summary

Course Summary

Course Review

Feedback

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A. Read the following plan excerpt and provide review comments for compliance with:

Requirement §201.6(c)(4)(ii), Element A:

Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?

Requirement §201.6(c)(4)(ii), Element B:

Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?

B. Provide review comments for **required** revisions as well as for **recommended** revisions.

C. Exchange review comments with Group B.

D. Read the review comments provided by Group B and revise the excerpt in direct response to the comments using track changes.

E. Exchange revised excerpts with Group B for final review and discussion.

Incorporation into Existing Planning Mechanisms

The County currently uses comprehensive land use planning, capital improvement planning, and building codes to guide development within the County. The Zoning Administrator and the Planning and Zoning Commission review and oversee zoning throughout the County.

After the County officially adopts the Hazard Mitigation Plan, these existing planning mechanisms will have hazard mitigation strategies incorporated into them. This will be done to increase mitigation opportunities in the County.

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): *[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?				
B. Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?				
		SUMMARY SCORE		

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): *[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?		The plan does identify planning mechanisms available for incorporating mitigation strategies		✓
B. Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?		Although the plan states that the County will incorporate mitigation strategies through the identified planning mechanisms, it does not describe the process to do so. **Required Revisions:** • Describe the process to incorporate the mitigation plan requirements into local planning mechanisms. For more information on integrating hazard mitigation activities in other initiatives, see *Bringing the Plan to Life* (FEMA 386-4), Step 2.	✓	
		SUMMARY SCORE	✓	

Incorporation into Existing Planning Mechanisms

The County currently uses comprehensive land use planning, capital improvement planning, and building codes to guide development within the County. The Zoning Administrator and the Planning and Zoning Commission review and oversee zoning throughout the County.

After adoption of the Hazard Mitigation Program (HMP), the County will work with the local municipalities to identify mitigation strategies that can be implemented through their comprehensive plans and land use regulations. The County will conduct periodic reviews of their comprehensive plans and land use policies, and will provide technical assistance for the implementation of mitigation strategies, zoning activities, and building codes enforcement.

The County will also work with the Building and Safety Officers to ensure that construction standards, addressing high priority hazards, are adopted and implemented. Future capital improvement activities will be closely monitored to ensure that high hazard areas are properly mitigated in accordance to the HMP goals.

The evaluation of the HMP will also serve as a tool to determine the effectiveness of implementing mitigation actions through established planning mechanisms.

A. Read the following plan excerpt and provide review comments for compliance with:

Requirement §201.6(c)(4)(i), Element A:

Does the plan describe the method and schedule for **monitoring** the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)

Requirement §201.6(c)(4)(i), Element B:

Does the plan describe the method and schedule for **evaluating** the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)

B. Provide review comments for **required** revisions as well as for **recommended** revisions.

C. Exchange review comments with Group A.

D. Read the review comments provided by Group A and revise the excerpt in direct response to the comments using track changes.

E. Exchange revised excerpts with Group A for final review and discussion.

Monitoring and Evaluating the Plan

The Hazard Mitigation Committee with support and recommendations from the City's planning staff will establish a method for monitoring and evaluating the plan on a yearly basis. The City will evaluate the effectiveness of the programs and reflect changes in land development or programs that may affect mitigation priorities. The monitoring schedule includes a timeline and identifies local agencies that will monitor the actions.

The City will review the goals and actions to determine their relevance to changing conditions and to ensure that they are addressing current and expected hazard conditions. The plan's risk assessment section will be updated as new information is available and the goals and actions sections will be reviewed and updated to reflect completed actions.

PLAN MAINTENANCE PROCESS

Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): *[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe the method and schedule for **monitoring** the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)				
B. Does the plan describe the method and schedule for **evaluating** the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)				
		SUMMARY SCORE		

PLAN MAINTENANCE PROCESS

Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): *[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe the method and schedule for **monitoring** the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)		The plan does not make a clear distinction between monitoring and evaluating the plan. Although related, monitoring the progress of the mitigation actions is not the same as evaluating the effectiveness of the plan. See *Bringing the Plan to Life* (FEMA 386-4), Step 2 and 3. There is no description of the method that will be followed to monitor the plan. Although there is a statement about the schedule for monitoring the actions, it is not clear what this schedule is. The plan states that the Hazard Mitigation Committee (HMC) with the City's planning staff will establish a method for monitoring the plan, and that local agencies will monitor actions. However, It is not clear what agencies will be responsible for monitoring the plan and what the HMC's role is. **Required Revisions:** • Include a description of the **method** and a **schedule** to monitor the plan. Include in the description the parties/agencies responsible for ensuring that the monitoring process is accomplished, and how and when the plan will be monitored. **Recommended Revisions:** • Monitoring may include periodic reports by agencies involved in implementing actions; parameters to measure the progress of the actions; and projected date of	✓	

		completion. For guidance on monitoring the plan, see *Bringing the Plan to Life* (FEMA 386-4), Step 2.		
B. Does the plan describe the method and schedule for **evaluating** the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)		The plan briefly describes how the City will evaluate the plan, including the effectiveness of the programs changes in land development and mitigation programs, goal and actions to determine changing conditions and ensure that it addressed current and expected hazard conditions, etc. However, the plan does not provide a schedule for these activities. It is also not clear which agencies will be responsible for evaluating the plan. **Required Revisions:** • Describe the **schedule** to evaluate the plan. Include in the description the parties/agencies responsible for evaluating the plan, and how and when the plan will be evaluated. For guidance on evaluating the plan, see *Bringing the Plan to Life* (FEMA 386-4), Step 3.	✓	
		SUMMARY SCORE	✓	

Monitoring and Evaluating the Plan

The Hazard Mitigation Committee (HMC) with support and recommendations from the City's planning staff ~~will establish~~ has developed a method for monitoring and evaluating the plan on a yearly basis. The monitoring schedule includes a timeline and identifies local agencies that will monitor the actions. The agencies responsible for implementing the mitigation actions will submit to the HMC a report on the progress of the actions on a quarterly basis. The report will include information on any special circumstances affecting the implementation of the action, such as, delays in the schedule, changes in the budget or scope of the action or changes in the hazard conditions or mitigation priorities. If necessary, the HMC will hold special meeting to address issues on site. Please refer to Appendix D titled *Monitoring Schedule* for reference on the agencies involved in this process.

On a yearly basis, ~~T~~the HMC will evaluate the effectiveness of the programs and reflect changes in land development or programs that may affect mitigation priorities. The information provided in the implementation progress reports will be used for the evaluation of the plan. Additional information will be collected on updates to planning regulations, documentation of new hazard events, and new development in the City. ~~The monitoring schedule includes a timeline and identifies local agencies that will monitor the actions.~~

The HMC will review the goals and actions to determine their relevance to changing conditions and to ensure that they are addressing current and expected hazard conditions. The plan's risk assessment section will be updated as new information is available and the goals and actions sections will be reviewed and updated to reflect completed actions.