



MULTI-HAZARD

EMERGENCY OPERATIONS PLAN

PART C - RECOVERY PLAN

Larry Hurst, County Coordinator

Mills County Emergency Management Agency

Revision 07-2007

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PREFACE

This Mills County Multi-Hazard Plan Part C - Recovery Plan establishes the policies, guidelines and procedures that will allow our emergency responders and government officials to function effectively, as a team, to recover from any disaster which affects Mills County.

The Plan is organized in a manner that enhances this functional approach by incorporating the following components:

1. **Basic Plan:** serves as an overview of Mills County's approach to recovery operations; assigns responsibilities; and defines broad policies, plans and procedures.
2. **Appendices:** augment the Basic Plan and contain hazard-specific and resource information.

The current revision of this Mills County Multi-Hazard Plan Part C - Recovery Plan fulfills the requirement in Iowa Administrative Code 605-7.2(4)(d)(1)(3) and complies with the guidance received from the Iowa Homeland Security and Emergency Management Division, dated 01/01.

Certifications of Comprehensive Emergency Plan, Parts B and C

FEMA-1998-DR-IA

If the county's Part B (Mitigation) and/or Part C (Recovery) Plans have been amended, the complete amended copy must also be submitted with this signed certification.

Iowa Administrative Code requires Part B (Mitigation) and Part C (Recovery) of the County Comprehensive Emergency Plan be reviewed, amended as appropriate, certified, and submitted to the Iowa Homeland Security and Emergency Management Division (HSEMD) for approval within 180 days of the formal closing of the disaster incident period for a presidential declaration for a major disaster. The Disaster 1998 incident period was formally closed on August 1, 2011. Certifications must be submitted by January 28, 2012 to HSEMD to maintain local government's eligibility to receive the state share of disaster assistance funding. Iowa Administrative Code also requires that a complete copy of both Part B and Part C be submitted at a minimum of every five years to HSEMD.

By signing below, the MILLS County Emergency Management Commission certifies that Part B (Mitigation Plan) of the MILLS County Comprehensive Emergency Plan has been reviewed following presidential disaster 1998. The commission also certifies that the Part B Plan is compliant with Iowa Code and standards adopted by the Iowa Homeland Security and Emergency Management Division.

Richard Crouch
Commission Chairperson - Printed

Richard Crouch
Commission Chairperson - Signature

JAN 24 2012
Date

Larry Hurst
EM Coordinator - Printed

Larry Hurst
EM Coordinator - Signature

JAN 24 2012
Date

By signing below, the MILLS County Emergency Management Commission certifies that Part C (Recovery Plan) of the MILLS County Comprehensive Emergency Plan has been reviewed following presidential disaster 1998. The commission also certifies that the Part C Plan is compliant with Iowa Code and standards adopted by the Iowa Homeland Security and Emergency Management Division.

Richard Crouch
Commission Chairperson - Printed

Richard Crouch
Commission Chairperson - Signature

JAN 24 2012
Date

Larry Hurst
EM Coordinator - Printed

Larry Hurst
EM Coordinator - Signature

JAN 24 2012
Date

County Emergency Management Commission Certifications of Comprehensive Emergency Plan, Mitigation and Recovery

FEMA- 4181-DR

Iowa Administrative Code Chapter 605, Chapter 7 requires Mitigation and Recovery portions of the County Comprehensive Emergency Plan be reviewed and amended as appropriate, certified, and submitted to the Division for approval within 180 days of the formal closing of the disaster incident period for a presidential declaration for major disaster. **Disaster 4181** incident period was formally closed on June 4, 2014. Certifications must be submitted to the Iowa Homeland Security and Emergency Management Division by **December 1, 2014** to maintain local government's eligibility to receive the state share of disaster assistance funding.

The _____ Mills _____ County Emergency Management Commission certifies that **the Mitigation Plan section** of the _____ Mills _____ County Comprehensive Emergency Plan has been submitted to the Iowa Homeland Security and Emergency Management Division within the last five years and has been reviewed and amended as appropriate following Presidential Disaster **4181** and remains compliant with Iowa Code and standards adopted by the Iowa Homeland Security and Emergency Management Division. The Part B has been approved and adopted by the members of the local or joint Emergency Management Commission.

Richard Crouch
Commission Chairperson – Printed

Richard Crouch
Commission Chairperson – Signature

NOV 25 2014

Date

Larry Hurst
EM Coordinator – Printed

[Signature]
EM Coordinator – Signature

NOV 25 2014

Date

The _____ Mills _____ County Emergency Management Commission certifies that **the Recovery Plan section (Part C and ESF-14)** of the _____ Mills _____ County Comprehensive Emergency Plan has been submitted to the Iowa Homeland Security and Emergency Management Division within the last five years and has been reviewed and amended as appropriate following Presidential **Disaster 4181** and remains compliant with Iowa Code and standards adopted by the Iowa Homeland Security and Emergency Management Division. The Part C has been approved and adopted by the members of the local or joint Emergency Management Commission.

Richard Crouch
Commission Chairperson – Printed

Richard Crouch
Commission Chairperson – Signature

NOV 25 2014

Date

Larry Hurst
EM Coordinator – Printed

[Signature]
EM Coordinator – Signature

NOV 25 2014

Date

Send completed certification form to: Iowa Homeland Security and Emergency Management Division,
Attention: Jack Briggs, 7900 Hickman Road, Suite 500/Windsor Heights, IOWA 50131-1824
or fax to 515-725-3260 or email jack.briggs@iowa.gov

FILE COPY

FORWARD

The basic purpose of this plan is to provide a guide for disaster recovery operations. The plan is intended to assist key county officials and emergency organizations to carry out their responsibilities in implementing activities and programs designed to restore normal public and/or utility services after a disaster. It emphasizes the coordination which must exist within and between services and levels of government, private and volunteer organizations and the many individuals with emergency capabilities.

Although an organization may have the foresight to plan for anticipated situations, such planning is of little worth if the planning is not reduced to written form. Personnel with intimate knowledge of unwritten plans may be unavailable at the very time it becomes necessary to implement them. A written plan will furnish a documentary record which can be referred to as needed. This documentary record will serve to refresh the knowledge of key individuals and can be used to inform persons who become replacements.

TRANSFER OF OFFICE

**THIS DOCUMENT SHALL REMAIN THE PROPERTY OF THE
MILLS COUNTY EMERGENCY MANAGEMENT AGENCY**

Upon termination of office by reason of resignation, election, suspension, or dismissal, the holder of this document shall transfer it to his/her successor or to the County Emergency Management Coordinator.



I. PURPOSE

The purpose of the recovery plan is to outline the process and procedures for coordinating disaster recovery and reconstruction operations for any community and/or unincorporated areas affected by a disaster event in Mills County, Iowa.

II. SITUATION

- A. Before and after a disaster event, recovery planning and program implementation represents one phase of the Emergency Management Disaster Life Cycle.
- B. Recovery planning serves as the written procedures developed by the Mills County Emergency Management Commission/Recovery Organization to return any affected community/area within Mills County to a normal operating status.
- C. After a disaster event, program implementation will depend upon the type of assistance needed, the requested time frame for assistance, and fulfillment of the criteria that serve as the activating mechanism for that type of recovery assistance.

III. ASSUMPTIONS AND PLANNING FACTORS

- A. In accordance with the Mills County Comprehensive Countywide Emergency Operations Plan, the Mills County Emergency Management Commission is responsible for the welfare of its constituents to the extent of its capabilities and resources. Once these resources have been exceeded, the Mills County Emergency Management Commission may petition the Governor for State and Federal assistance.
- B. The affected local community must initiate response and recovery operations to the extent of its local resources or those coordinated through mutual aid agreement, contract, or other similar agreements. The Coordinator of Emergency Management will be the coordinating official for the disaster recovery effort for Mills County and will coordinate with State and Federal disaster recovery representatives.
- C. The Mills County Emergency Management Commission, through the County Emergency Management Coordinator, must request additional assistance from the State and Federal government when local resources are exceeded and/or exhausted.
- D. State-level disaster recovery assistance will be coordinated through the Iowa Homeland Security and Emergency Management Division (HSEMD). HSEMD will coordinate activities of state-level departments and agencies through a State Coordinating Officer (SCO) appointed by the Governor or his authorized representative.
- E. Federal level disaster recovery will be coordinated through the Federal Emergency Management Agency (FEMA). This will be coordinated through the Regional Director of FEMA Region VII. A Federal Coordinating Officer (FCO) will be appointed by the President of the United States and the Director of FEMA for the disaster. The FCO will coordinate all federal-level disaster recovery activities with the SCO.

IV. **ORGANIZATION AND RESPONSIBILITIES**

- A. The Mills County Emergency Management Commission, constituted in accordance with Iowa Code ' 29C, is responsible for the planning and execution of all Emergency Management programs. The Mills County Emergency Management Agency is the executive agent for the Commission and will be the coordinating agency for any disaster recovery operation.
- B. A Recovery Plan, enacted by the Mills County Emergency Management Commission to coordinate recovery operations, will serve as the authority of the disaster recovery process.
- C. As identified in the HSEMD'S Recovery Planning Guidance, the following responsibilities are addressed:
 - 1. Public health and safety
 - 2. Donations management to include in-kind and monetary
 - 3. VOAD'S to include human resource tracking
 - 4. Business resumption
 - 5. Disaster assessment process
 - 6. Demolition of severely damaged or destroyed structures
 - 7. Debris removal and storage
 - 8. Expedited repair permitting
 - 9. Illegal buildings and uses
 - 10. Temporary and replacement housing
- 1. Public Health and Safety
 - a. The Mills County Recovery Plan will provide the following "how-to" for public dissemination following a disaster event pertaining to public health. (See Appendix A.)
 - 1. Food and Water Safety for Flood Victims
 - 2. Emergency Health Information for Flooded Areas
 - 3. How to Estimate the Volume of Flood Water in your Well
 - 4. Disinfecting of Contaminated Wells and Cisterns
 - 5. Disinfecting a Well: Shock Chlorination
 - 6. Restoring Drinking Water
 - 7. Water Pollution
 - 8. Household Chemicals and Hazardous Waste
 - 9. Cleaners and Disinfectants
 - 10. Septic Tank Failures
 - 11. Controlling Snakes after the Storm
 - 12. Controlling Rodents after the Storm
 - 13. Cleaning Flood-Soiled Clothing
- 2. Donation Management
 - a. In an effort to best-provide what is most needed by the disaster victims, the Mills County Emergency Management Agency will provide information in the form of a Press Release regarding donations. (see Appendix B.)

- b. In the event that the items received exceed the affected community's ability to accommodate and track donations, the Mills County Emergency Management Commission will assist and provide technical advice.
- 3. Volunteer Organizations Active in Disasters (VOAD'S)
 - a. The Mills County Emergency Management Commission will request that all VOAD'S providing recovery assistance within the County, register with the Mills County Emergency Management Coordinator within 24 hours of arriving on-scene.
 - b. The explanation for this is two-fold:
 - 1. Provides the Mills County Emergency Management Commission with a listing of organizations that are on-scene and providing assistance and a point of contact should documentation be needed to verify volunteer hours.
 - 2. Provides the Mills County Emergency Management Commission with a listing of credible organizations should a referral need to be made.
- 4. Business Resumption
 - a. Business resumption and economic recovery in Mills County will be addressed in two phases, Short-term Economic Recovery and Long-term Economic Recovery.
 - b. Short-term recovery will consist of the following measures:
 - 1. Contact the local Chamber of Commerce to assist in the identification of local business impacted by the disaster.
 - 2. Begin establishing communications with the Federal Economic Development Administration, the Small Business Administration, and the Iowa Homeland Security and Emergency Management Division pertaining to potential grants and or loans to assist with business resumption.
 - c. Long-term economic recovery will consist of the following measures:
 - 1. Hazard mitigation will be incorporated into all business resumption / economic recovery measures to lessen the affects of future disasters.
 - 2. Hazard mitigation steps will potentially include retrofit of structures, acquisition and demolition if proven to be cost-effective, and structural relocation.

5. Disaster Assessment Process

- a. A Disaster Assessment of the affected area will be conducted by the Mills County Emergency Management Agency, supported by local Disaster Assessment Teams, municipality and/or county department representatives, and volunteer fire departments. The Disaster Assessment process may be coordinated with the American Red Cross and other agencies, but for purposes of pursuing disaster declarations, the reports developed by HSEMD will be utilized.
- b. Damage Assessment reports will include numbers of persons killed, injured, or missing. Building damage will be for homes, businesses, public facilities, and industrial facilities. Buildings will be listed as Destroyed, Major, Minor, or Affected but Habitable. Recovery Task Force officials will make the final determination of the habitability of any structure.
- c. Building placards will be placed by Recovery Task Force representatives. Unauthorized removal of these placards is subject to fines and other legal action. Damage Assessment reports will be submitted on State Damage Assessment Forms. (see Appendix C.)
- d. Disaster declarations for any emergency situation will be initiated by the local community and submitted to the Mills County Emergency Management Agency for a County Disaster Declaration. If necessary, the County Emergency Management Agency, through the Iowa Homeland Security and Emergency Management Division, will present the Governor with a request for State recovery assistance approval. The Mills County Emergency Management Agency will coordinate and facilitate the disaster declaration process with the respective representatives from the County, Community(s), HSEMD, and FEMA. The purpose of the Disaster Declaration is to declare that an official emergency exists and warrants outside resources.

6. Condemnation / Demolition of Severely Damaged or Destroyed Structures and Historic Building Controls.

- a. As soon as possible after a disaster event, the Recovery Task Force shall notify the State Historic Preservation Office that one of the following actions will be taken with respect to any building or structure determined by the Task Force to represent an imminent hazard to public health and safety or to pose an imminent threat to the public right-of-way.
 1. Where possible, and within reasonable time limits, the building or structure shall be braced or shored in such a manner as to mitigate the hazard to public health and safety or the hazard to the public right-of way.
 2. Whenever bracing or shoring is not reasonable, the Recovery Task Force shall have the authority to cause the building or structure to be condemned and immediately demolished. Such action shall be performed in the interest of public health and safety without a condemnation hearing as otherwise required. Prior to demolition, the Recovery Task Force shall photographically record the entire building or structure.

7. Debris Removal and Storage.
 - a. The Recovery Task Force shall coordinate with the jurisdictions having the authority to remove from public right-of-way debris and rubble, trees, damaged or destroyed cars, trailers, equipment, and other private property, provided that the action is reasonably justified for the protection of life and property. For complete debris management and storage plan, see Appendix D.
8. Expedited Permitting.
 - a. The Recovery Task Force shall have the ability to issue permits, where applicable, in an expedited manner following a disaster event. The Recovery Task Force will accomplish this through establishing a one-stop permit center (if such facility is not available otherwise).
 - b. Following a disaster event, temporary emergency repairs to secure structures and property damaged in the disaster against further damage or to protect adjoining structures or property may be made without fee or permit. The Recovery Task Force must be notified within 10 working days, or regular permits with fees, where applicable, may then be required.
 - c. Except for temporary repairs issued, all other repairs, restoration, and reconstruction of buildings damaged or destroyed in the disaster shall be approved through permit, where applicable. Fees for such repair and reconstruction permits may be deferred for a set number of days following the event as determined by the Recovery Task Force.
9. **Nonconforming Buildings and Uses.**
 - a. Buildings significantly damaged or destroyed in the disaster that are legally nonconforming as to use, yards, height, number of stories, lot area, floor area, residential density, parking, or other provisions of the County and Municipal Codes may only be repaired, reconstructed, or replaced in conformance with adopted building or zoning regulations.
10. Temporary and Permanent Housing.
 - a. The Mills County Emergency Management Commission will work with the Iowa Homeland Security and Emergency Management Division, the Federal Emergency Management Agency, the Small Business Administration, the Department of Housing and Urban Development, and other appropriate governmental and private entities to identify special programs by which provisions can be made for temporary and permanent replacement housing that will help avoid undue displacement of people and businesses.
 - b. Such programs may include deployment of temporary manufactured housing and temporary manufactured housing developments, use of SBA loans, and available Section 8 and Community Development Block Grant funds to offset repair and replacement housing costs, and other initiatives appropriate to the conditions found after a disaster. (See Appendix E.)

V. CONCEPT OF THE RECOVERY OPERATION

- A. Disaster recovery operations begin immediately with the response activities to a disaster. The recovery operations are designed to return the community to a pre-disaster or near-normal state as quickly as possible and to meet the needs of the affected population, residences, businesses and public facilities.
- B. Further damage assessment will be compiled by HSEMD and FEMA as needed. A detailed inspection of damaged property and infrastructure will be completed by building inspectors and engineers for final determination of damage.
- C. Recovery Operation Levels
 - 1. Emergency Period (initial hours and days after the disaster)
 - 2. Restoration Period (after emergency period when major services and transportation needs are restored, evacuees return and rubble and debris removed)
 - 3. Replacement - Reconstruction (rebuild capital stock to pre-disaster levels and economic activity is restored to pre-disaster activity)
 - 4. Developmental Replacement - Reconstruction (major reconstruction activities and new growth development activities)
- D. Recovery Organization
 - 1. The Recovery Organization shall be the Mills County Emergency Management Commission, for the purpose of coordinating County and City actions in planning and implementing disaster recovery and reconstruction activities.
 - 2. Powers and Duties. The Recovery Organization shall have such powers as enable it to carry out the purposes, provisions, and procedures of this chapter, as identified in this chapter.
 - 3. Recovery Task Force. The Recovery Organization shall include a Recovery Task Force comprised of the following officers and members:
 - a. The Chair of the Mills County Board of Supervisors will be Acting Chair. The Acting Chair shall call the initial meeting of the Recovery Task Force. The members of the Recovery Task Force will be the Chair of the County Board of Supervisors and Mayors of the affected communities. At the initial meeting, the members will elect the Chair and Vice Chair of the Recovery Task Force.
 - b. The vice Chair of the County Board of Supervisors may act in the absence of the Chair of the Board of Supervisors; the Mayor Pro-Tempore of the affected City(s) may act in the absence of the Mayor.
 - c. The County Attorney and affected City Attorney who shall be Legal Advisor(s) as requested by their respective elected official.

- d. Other support staff, including the County and affected City Building Officials; County Engineer; County Health Department; Emergency Management Coordinator; Sheriff and affected City Police Chief; Fire Chiefs; DHS and County Social Services Director; affected City Public Works and Utilities Directors, together with representatives from such other departments and offices as may be deemed necessary by the Chair or Director for effective operation.
 - e. In the actions of the Recovery Task Force, each jurisdiction will have one (1) vote.
 - 4. Operations and Meetings. The Emergency Management Commission Chair shall have responsibility for Recovery Organization operations. When an emergency declaration is not in force, the Recovery Organization shall meet quarterly, or more frequently upon call of the Chair. After a declaration of an emergency, and for the duration of that declared emergency period, the Recovery Task Force shall be activated and meet daily or as frequent as determined by the Task Force Chair.
 - 5. Succession. In the absence of the Task Force Chair, the Vice Chair shall serve as Acting Chair and shall be empowered to carry out the duties and responsibilities of the Chair.
 - 6. Organization. The Recovery Task Force may create such standing or ad hoc committees as determined necessary by the Chair.
- E. Responsibilities of Local Governments
- 1. Shelter and temporary lodging for victims and emergency workers.
 - 2. Family Assistance (food, clothing, medication, loans) and some assistance is received from non-governmental agencies such as American Red Cross and Salvation Army while other assistance is through government support programs).
 - 3. Critical Incident Stress Counseling
 - 4. Legal Assistance
 - 5. Debris Removal and Disposal
 - 6. Removal and disposal of animal carcasses from agricultural areas.
 - 7. Clearance of Major Transportation Arteries (includes roads and bridges designated as primary and secondary arteries).
 - 9. Utility Service Restoration (Includes electric, gas, water, telephone, and fuels).
 - 10. Building Inspection and classification.
 - 11. Opening Critical Facilities (Includes medical, public safety, schools, and government facilities).

12. Reoccupying Structures (Includes critical commercial and residential facilities).
 13. Reconstruction of buildings and facilities.
 14. Rezoning
 15. Mitigation
- F. Short-term Recovery: Actions taken immediately after a disaster to restore public services and return a community to pre-disaster conditions.
- G. Long-term Recovery: Actions taken to improve the quality of the community for the future. Decisions may include rezoning, removal of damaged facilities, moving or changing infrastructure and utilities, and changes to residential and commercial long-range development plans.

VI. ADMINISTRATION AND LOGISTICS

- A. The Mills County Emergency Management Commission is not the lead agency in disaster recovery operation but is a coordinating agent for the recovery operations on behalf of the community(s) affected. Recovery decisions are retained for the elected leadership of the affected communities and the county through the Recovery Task Force.
- B. Recovery operations will be coordinated through the Mills County Emergency Operations Center for community-wide coordination. Specific recovery projects will be coordinated on site or through a designated project office to be determined by the affected community.
- C. Logistics for the immediate recovery process will be coordinated through the Mills County Emergency Operations Center during the emergency phase of the operation. Follow on decisions will be coordinated through the respective project office.

VII. PLAN UPDATES

- A. At a minimum, Part C of the Comprehensive Countywide Emergency Operations Plan will be reviewed in accordance with Iowa Administrative Code 605-7.2(4)(d)(3)-29c.9*d. Planning

Plans shall be regularly reviewed and amended as appropriate in accordance with schedules established by the commission, to include at minimum:

A complete review, and amendment as appropriate, of the Emergency Operations Plan (Part A) at a minimum of every five years. However, a review, and amendment as appropriate, of the hazardous materials portion (Annex P) of the plan shall be conducted on a yearly basis.

A complete review, and amendment as appropriate, of the Hazard Mitigation Plan (Part B) at a minimum of every five years and in conjunction with any presidentially declared disaster for which mitigation assistance is requested.

A complete review, and amendment as appropriate, of the Recovery Plan (Part C) at a minimum of every five years and in conjunction with any presidentially declared disaster for which individual or public assistance is requested.

Appendix A Public Health and Safety

Food and Water Safety for Flood Victims -	-	-	-	-	-	-	-	A-2
Emergency Health Information for Flooded Areas -	-			-	-	-	-	A-6
How to Estimate the Volume of Water in your Well -	-	-	-	-	-	-	-	A-10
Disinfecting of Contaminated Wells and Cisterns -	-	-	-	-	-	-	-	A-11
Disinfecting a Well: Shock Chlorination - -	-	-	-	-	-	-	-	A-15
Restoring Drinking Water -	-	-	-	-	-	-	-	A-16
Water Pollution -	-	-	-	-	-	-	-	A-19
Household Chemicals and Hazardous Waste -	-	-	-	-	-	-	-	A-20
Cleaners and Disinfectants -	-	-	-	-	-	-	-	A-21
Septic Tank Failures -	-	-	-	-	-	-	-	A-22
Controlling Snakes after the Storm -	-	-	-	-	-	-	-	A-23
Controlling Rodents after the Storm -	-	-	-	-	-	-	-	A-24
Cleaning Flood-Soiled Clothing - -	-	-	-	-	-	-	-	A-26

I. FOOD AND WATER SAFETY FOR FLOOD VICTIMS

Contaminated food and water can be a problem following any storm involving flooding. This is because floodwaters may carry silt, raw sewage, oil, or chemical wastes. Intestinal disease causing diarrhea and dysentery are the most likely illnesses to be spread from flooding. The parasite giardia, and intestinal viruses present in floodwater are most likely to blame. Waterborne transmission of E. Coli, Salmonella and Shigella are also concerns.

Play it safe: When it comes to flood water, *don't* drink it, swim, bathe or play in it. Wash hands thoroughly after exposure to it. Be especially careful to keep children away from floodwater. Protect against cutting yourself and exposing cuts to the contaminated water.

A. Safe Drinking Water

1. Drinking water may be disinfected by ONE of the following methods:
 - a. Boil water for 3 minutes in a clean container. Water must be at a rolling or vigorous boil for the 3 minutes.
 - b. Mix one-half (1/2) teaspoon of liquid, unscented chlorine laundry bleach, such as Clorox or Purex, with two-and-one-half (2-1/2) gallons of water, and let stand for at least 30 minutes before drinking.
 - c. Add two (2) drops of tincture of iodine solution to one (1) quart water. After mixing thoroughly, allow to stand for at least 30 minutes before drinking.
2. Be sure to use boiled or disinfected water to brush teeth and wash face and hands.

B. Restoring Flooded Wells and Cisterns

1. Wells will probably not be damaged structurally from floods, but they may be contaminated by silt, raw sewage, oil and disease organisms found in flood water. If your well has been flooded, the well and the entire water system should be cleaned and disinfected.
2. First, remove silt and debris from the well and examine casing, motors and pumps, piping, electrical and other system components for damage. Consult a serviceman if the damage is extensive or if you are unable to determine the extent of damage or unable to perform the necessary repairs.
3. To Disinfect the Well:
 - a. Pump the water until it is clear.
 - b. Scrub and disinfect the pump room and wash all equipment, including piping, pumps and pressure tanks with at least a 2% chlorine solution. (Laundry bleach, such as Clorox or Purex, is usually 5% or more chlorine, so mixing 1 gallon of bleach with 12 gallons of water will produce the 2% solution.

- c. Remove the well seal or plug at the top of the casing. Shock chlorinate the well with 3 pints of 5.25% chlorine per 100 gallons of water in the well. Be sure chlorine is the only active ingredient. You will need to calculate the volume of the water in the well to obtain the correct amount of chlorine mixture needed. Let stand for at least 4 hours.
 - d. Disconnect charcoal filters and begin pumping the chlorinated water through the entire water system. Open one faucet at a time until there is a strong chlorine odor at each faucet. Close the faucets and leave the chlorine in the piping at least 2 hours, and preferably overnight. (The longer the chlorine stays in the system, the better the disinfecting.)
 - e. After the water system has been chlorinated the proper amount of time, pump and flush the system until the taste and odor of chlorine are no longer present. Use an outside faucet for flushing the system first to avoid overloading the septic system.
 - f. Finally, have the water tested for bacteria. Boil or treat all drinking and cooking water until the water test indicates the water is safe for all purposes. It may be necessary to re-chlorinate the well if bacteria is still present. Retest every 1 or 2 weeks until 2 consecutive tests indicate the water is safe.
4. Flooded cisterns should first be pumped dry, using an auxiliary pump. Do not pump water through the piping system. After pumping dry, wash down the walls, ceiling and floor with clean water and pump out the dirty water. Next, check the cistern walls, ceiling and floor for cracks where ground water could come in.
 5. The cistern interior should be disinfected using a solution of 1 quart of liquid household bleach to 3 gallons of water. The chlorine solution can be applied using a sprayer or scrubbing with a stiff broom. Pump out the disinfecting solution that collects in the bottom of the cistern.
 6. Also, before using the piping system, it should be decontaminated. Disinfect the piping system following the same procedure used for wells.
 7. Finally, fill the cistern with water for use and have it tested. The water should have a chlorine taste for a while, but it should be safe for all purposes. Drinking water should be treated or boiled until the water is tested and found to be safe for drinking.

C. Food Safety

1. Inspect food carefully after a flood. Contamination may occur if filth and disease bacteria in flood waters cover, drip or seep into food.
2. Discard all foods packed in foil, cellophane, paper, cloth or cardboard that have come in contact with flood waters. Even if the contents seem dry, they may not be safe.
3. Discard all flooded meats, fish, poultry, fresh fruits and vegetables as well as foods packaged in crown-capped bottles, and glass or plastic jars and bottles. Filth from floodwaters can get up under the lip of these lids and contaminate the food. If you are unsure about the condition of the food, throw it away.

4. Only food in sealed, airtight metal cans is entirely safe for use if you carefully clean and disinfect the cans before opening. Choose one of the two steps:
 - a. Remove labels. Use a permanent marker to re-label each can.
 - b. Wash the cans in a strong detergent solution with a scrub brush to remove all dirt.
 - c. Disinfect the cans by immersing them in a solution of 1 tablespoon household unscented laundry bleach in 1 gallon of water for 2 minutes.
 - d. Rinse in clear, clean, disinfected water.
 - e. Air dry (towels spread bacteria).

OR

 - f. Place cans in boiling water and boil for 10 minutes. Don't worry, cans will not blow up. For this short time period, only the outside of the can will heat up, killing bacteria on the surface. However, it would be dangerous to leave cans in boiling water for a prolonged period of time.
5. Do not attempt to salvage cans that are bulging or damaged. Throw them away, they are not safe.
6. Home canned foods that were covered with flood water are not safe. Throw away the food and sterilize the empty jars and metal rings. Discard the rubber flat.

D. Kitchen Utensils and Cookware

1. Wash all china and glass dishes and cups, and pots and pans that have been covered by flood waters with hot soapy water and a brush to remove dirt. Any piece of equipment that can be taken apart should be cleaned in pieces. Dip in the sanitizing bleach solution and rinse in clean water as stated above. Dishes with deep cracks should be thrown away.
2. Plastic cookware, utensils, dishes and cups and wooden utensils and bowls cannot be disinfected if exposed to flood water. Plastic baby bottles and nipples, Tupperware, and other plastic containers must be thrown away also.
3. Kitchen utensils made of iron will probably be rusted. Remove the rust by scouring with steel wool. Sterilize with the bleach solution mentioned above and re-season. To do this, apply a light coat of unsalted fat or oil and place in a 350 degree oven for about an hour.

E. Failure of Refrigeration-Freezer Units

1. Without power, the refrigerator section will keep food cool 4-6 hours depending on the kitchen temperature. Block ice can be added to keep the refrigerator cold if there's a delay in getting the power back on.
2. A full, well-functioning freezer unit should keep foods frozen for 2 days. A half-full freezer unit should keep things frozen for about 1 day. Dry ice can be added to the freezer unit. Be careful not to breathe the fumes or handle with bare hands, dry ice can burn.

F. Garden Produce

1. Garden produce that has been exposed to flood water is not safe to eat. Do not attempt to disinfect, save, or preserve crops, not even root crops.
2. If plants survive, the new produce that forms on them after the flood waters have receded are safe to consume. It will take about a month for gardens to become clean.

G. Food Preparation

1. Always wash hands with soap and disinfected water before preparing foods.
2. Boil all water that you plan to use in food preparation for 3 minutes.
3. Conserve fuel, water and energy, as well as the number of cooking and serving utensils by preparing casseroles and one meal dishes, such as stews, pot roasts and thick, nourishing soups.
4. Save the liquids from canned fruits and vegetables. Use this liquid in place of water called for in recipes.
5. If your oven is in working condition, use it to prepare foods. Oven cooking will require less attention and free you to do other tasks while the meal cooks.
6. If you lack refrigeration, cook only as much as can be eaten at one meal. Limit leftovers.
7. If you have an infant who is drinking baby formula, make up only enough formula for immediate use. Powdered formula concentrate is better than liquid concentrate because, once opened, it needs no refrigeration. However, once the concentrate is reconstituted, it will need to be refrigerated.
8. Avoid keeping prepared or cooked food at room temperature. Keep hot foods hot (above 140 degrees F.) and cold foods cold (below 40 degrees F.).

II. **EMERGENCY HEALTH INFORMATION FOR FLOODED AREAS**

In order to provide one convenient source of emergency health information for those who must return to, live in, and salvage flood-stricken homes, the Iowa Department of Public Health has summarized in this brochure information released by various state and national agencies.

A. **Disinfecting Water**

1. All water possibly contaminated by flooding must be disinfected, whether from wells or cisterns.
2. Drinking water may be treated by one of the following methods:
 - a. Boil water for three (3) minutes in a clean container. The flat taste can be eliminated by shaking the water in a bottle or by pouring it from one container to another.
 - b. Mix one-half (1/2) teaspoon of liquid, unscented chlorine laundry bleach, such as Clorox or Purex, with two-and-a-half (2+1/2) gallons of water, and let stand for at least thirty (30) minutes before drinking.
 - c. Add two (2) drops of tincture of iodine solution to one (1) quart of water. After mixing thoroughly, allow to stand for at least thirty (30) minutes before drinking.
3. Once flood waters have receded, wells or cisterns should be adequately protected against all known sources of contamination before disinfecting the supply.

B. **Salvaging Damaged Goods**

1. To prevent diarrheal diseases and dysentery, the following items should be destroyed if they have been exposed to flood waters: fresh meats and poultry; prepared and processed foods; home canned foods; medicines and cosmetics; packages that are not hermetically sealed (airtight), including flour, packaged frozen foods, and other commodities in soft-sided paper containers.
2. Throw out foods needing refrigeration if the refrigerator has been out for more than six hours. Don't refreeze frozen foods which have thawed. Throw them out if they've been thawed for more than four hours.
3. Since seepage can carry harmful bacteria into all but airtight containers, the contents of crown-capped bottles, screw-top glass containers (including canned foods in glass jars) should be destroyed. Sealed metal cans, if punctured, bulging, or leaking, are unsafe.
4. If airtight cans are in good condition, they can be salvaged, but they must be carefully cleaned and disinfected before using the contents. Follow this procedure:
 - a. Remove labels. Keep the same kinds of foods together or mark them in a way that will enable you to identify them after disinfecting. Colored crayon or adhesive tape may be used.
 - b. Wash cans in warm water containing soap or detergent.

- c. Soak the cans for at least one minute in a disinfecting chlorine solution made by mixing four (4) tablespoons of liquid, unscented, chlorine laundry bleach with two (2) gallons of water. Rinse in clean, cool water that has been boiled for at least three (3) minutes.

C. Insect and Rodent Control

1. To guard against a possible influx of rats, flies, and mosquitoes in flood-damaged areas, the following precautions should be taken:
2. Clean up debris and refuse as soon as possible.
3. Properly store all usable food.
4. Place garbage and all spoiled food in secure, fly-tight, and rat-tight containers while waiting for collection.
5. Make necessary repairs to all window and door screening.
6. Dump any containers holding water and eliminate any standing pools of water around the home.

D. Cleaning Clothing and Bedding

1. Since disease-producing bacteria often carried by floodwaters can remain alive for long periods in and on fabrics, care in laundering clothing and bedding is essential.
2. First, brush off all dirt, and if mud-stained, rinse in cool water until as much mud as possible is removed. Then wash as usual, using enough detergent to keep soil from re-depositing on fabrics.
3. The use of a disinfectant in the rinse water is especially recommended to destroy bacteria. Two types of disinfectants are effective, such as Lysol and chlorine (liquid chlorine bleach).
4. Mattresses soaked with flood water should be discarded since reconditioning is too difficult to be done at home.
5. However, foam rubber pillows, if left in their covers, may be washed and air dried. Do not use an automatic drier or dry cleaning solvents.

E. Entering Damaged Buildings

1. If there are any doubts about the safety of a building which has been flooded, do not enter it. Seek professional advice first.
2. When you do enter a damaged building, check it for buckled walls, loose bricks, cracks or any shifting of the foundation.
3. Do not pump flooded basements out too quickly because the water-saturated ground around the basement could push the walls in.
3. Follow the instructions of your utility company concerning the restoration of gas or electrical service.

F. Immunizations

1. **Typhoid**-no outbreak anticipated. There is no greater threat of typhoid fever after a flood than there is under normal conditions. The number of typhoid cases identified in the state over the past few years is so small that no mass typhoid immunization is recommended. Immunization requires about six weeks to become effective. Immediate protection from diarrheal diseases can best be provided by using only water which has been boiled for 3 minutes or treated chemically.
2. **Tetanus**-We recommend as always that tetanus immunization be up to date. For adults, a tetanus-diphtheria toxoid booster is recommended every 10 years.

G. Personal Hygiene

1. Several simple rules of personal cleanliness should be followed:
 - a. Wash hands with soap and water after using the toilet or participating in flood clean-up and handling flood-contaminated articles.
 - b. Use boiled or disinfected water for brushing teeth.

H. Safety Precautions

1. During the urgency of clean-up time, people are often inclined to overlook proper safety measures. Below are a few reminders:
 - a. Set priorities; accomplish the vital tasks first and avoid physical overexertion.
 - b. Regardless of the crisis, be sure children are safe and being cared for at all times. Never leave them alone or allow them to play in flood-damaged buildings or areas that might be unsafe.
 - c. Give special attention to cleaning children's toys, cribs, playpens, and play equipment. Items a baby or toddler may put into his/her mouth should be boiled. Discard all stuffed toys and those that are not easily-cleaned or are water-logged.
 - d. Keep chemicals used for disinfecting and poisons for insect and rodent control out of the reach of children.
 - e. Wear protective clothing covering limbs, feet, and hands while cleaning up debris, and wear rubber gloves while scrubbing flood-damaged interiors and furniture.
 - f. Be sure electrical appliances are dry and in good condition before using.

I. Medicines

1. Discard all medications exposed to flood water and have all needed prescriptions refilled as soon as possible.

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J. Cleaning of Cooking and Eating Utensils

1. Dishes, pots, and pans that have been covered by flood waters should be carefully washed and disinfected before use. Wash everything in hot, soapy water, using a brush, if necessary, to remove dirt. Rinse everything thoroughly in safe water, then disinfect by immersing for one (1) minute in a chlorine solution made up of four (4) tablespoons of liquid, unscented, chlorine household bleach in two (2) gallons of water.
2. Pots and pans can be sterilized by boiling for at least ten (10) minutes. Dishes with deep cracks should be thrown away.

K. Food Preparation

1. Here are a few hints to insure safe and easier meals:
 - a. Boil for three (3) minutes all water used for food preparation.
 - b. Wash hands and cooking utensils in a disinfecting solution made by mixing one-half (1/2) teaspoon of liquid, unscented chlorine laundry bleach with two-and-one-half (2+1/2) gallons of water.
 - c. Conserve fuel, water, and energy, as well as the number of cooking and serving utensils, by preparing casseroles and one-dish meals, such as stews, pot roasts, and thick, nourishing soups.
 - d. Save the liquids of canned vegetables. Substitute them for water in recipes for soups, stews, and other cooked dishes.
 - e. Drain and save juices from canned fruits. They may be mixed and combined with other canned fruit juices and used as beverages and in making gelatin salads or desserts instead of scarce water.
 - f. If your oven is in working condition, use it to cook stews, vegetables, and other foods. Oven cooking will require less attention and free you to do other tasks while the meal cooks.
 - g. If you lack refrigeration, cook only as much as can be eaten at one meal. In any case, limit the use of leftover foods.
 - h. When purchasing formula ingredients for infants, be sure the containers are sealed. After opening in the home, be sure they are tightly covered to prevent contamination. In the absence of refrigeration, make up only enough formula for immediate use.
 - i. Unless refrigeration is available, avoid foods that are subject to quick spoilage and bacterial contamination, such as creamed foods, hash, custards and pies, and salads and sandwiches mixed with mayonnaise or other perishables.
 - j. Hashes, croquettes, meat pies, and ground meats are easily spoiled and contaminated. If used, they should be served promptly.
 - k. Avoid keeping prepared or cooked food at room temperature. Keep hot

foods hot (above 140F) and cold foods cold (below 45F).
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III. HOW TO ESTIMATE THE VOLUME OF WATER IN YOUR WELL

A. General Instructions

1. In order to know how much chlorine to put into your well to shock chlorinate it you must first have a reasonably accurate estimate of the amount of water that is in the well. There are several ways to do this. First you can calculate the volume in cubic feet and multiply by 7.48, or you can use the Table 1 to determine the volume of water per foot of depth and multiply by the depth.
2. An example of how to do this is: the well is 36" (3 feet) in diameter and the depth of water is 40'. How much water is in the well?
3. Solution: from Table 1, a 3' diameter well has 52.87 gallons per foot of depth. Multiply this by the depth of water (40'). The well has 2115 gallons of water in it. $52.87 \times 40 = 2114.8$ gallons

Table 1

Well Diameter in Inches	Gallons per Foot of Depth	Well Diameter in Feet	Gallons per Foot of Depth
2	0.163	1	5.87
3	0.367	2	23.50
4	0.653	3	52.87
5	1.02	4	94.00
6	1.47	5	146.87
8	2.61	6	287.86
10	4.08	9	475.86

4. After determining the volume in the well that must be treated you need to determine the amount of chlorine that must be added. To do this you need to take the amount of water and find a source of chlorine. The source of chlorine will determine how much material you need to put into the well. Table 2 shows the amounts and the different sources of chlorine.

Table 2

Type of Carrier	Amount to Add
5% chlorine bleach	3 pints/100 gallons of water
12% - 17% chlorine solution	1 pint/100 gallons of water
25% - 30% chlorine powder	$\frac{2}{3}$ lb./100 gallons of water
65% - 75% chlorine powder or tablets	$\frac{1}{4}$ lb./100 gallons of water

IV. DISINFECTING OF CONTAMINATED WELLS AND CISTERNS

A. Making Water Safe for Human Consumption

1. Water of uncertain bacteriological quality should be disinfected before it is used for drinking or in food preparation. Boiling the water will kill disease-producing organisms that may be present, but boiling large quantities of water is inconvenient and impractical. It is usually more practical to disinfect a water supply with an oxidizing agent such as chlorine.
2. There are several commercial products that may be used for disinfecting water. These include dry chlorinated lime (also called bleaching powder), household bleaches such as Clorox or Purex and calcium hypochlorite compounds such as HTH, Perchloron or B-K Powder.
3. The amount of a chlorine compound required to make water safe varies according to both quality and amount of water to be treated. The general rule is to add enough disinfectant to give the water a distinct chlorine odor and taste. The odor or taste will disappear within a few days following treatment.

B. General Instructions

1. Table 1 on page A - 13 lists various chlorine compounds and shows the amount of material ordinarily required to disinfect 1000 gallons of water. A chlorine concentration of five parts per million is sufficient for routine disinfecting; a heavily contaminated supply may require up to 50 PPM for complete disinfecting.
2. If a powdered or granular compound is chosen for use, blend the material with water until it becomes a smooth paste. Allow this mixture to settle, then strain the liquid through a finely woven cloth. The disinfectant is then ready to add to the water supply.
3. If a liquid compound is used, the required amount should be mixed in one or two gallons of water, and poured into the well or cistern. If possible, the water should be stirred to aid distribution of the disinfectant. (This may be accomplished by re-circulating the water back into the well with the use of a garden hose or other method of conveyance.)
4. After the Chlorine compound has been added to well or cistern, open all faucets and flush all toilets till you smell chlorine. This will disinfect the plumbing.

C. Disinfecting of Wells

1. When disinfecting a deep well, there is a possibility that liquid or powdered material will not reach the bottom of the well in sufficient quantity to be effective. Calcium hypochlorite in tablet form, which will sink to the bottom of the well before dissolving, is preferable in this case. If the well has been flooded or if tests indicate heavy contamination, add enough chlorine material to the well water to establish a chlorine concentration of 50 PPM. The well can be pumped to reduce the chlorine content to a level suitable for drinking (5 PPM), after 12 hours.

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2. If surface drainage or shallow underground water can enter the well, disinfecting provides only temporary protection. To permanently safeguard the supply, the well should be reconstructed to protect against further contamination. Literature showing proper well construction is available from the Department of Health.

D. Disinfecting of Cisterns

1. To disinfect a water supply in a cistern, add enough chlorine material to establish a concentration of 5 PPM. Unless the water is excessively turbid, this amount should oxidize all the organic matter and leave enough residual chlorine to be detected by taste or odor.
2. When the exact volume of water to be treated is not known, the amount of chlorine material needed must be estimated. If the material used has oxidized all the organic matter and a chlorine odor remains after 12 hours, the water is safe for drinking. If no trace of chlorine remains at the end of the disinfecting period, it can be assumed that the treatment has been inadequate and more chlorine materials should be added.
3. **Caution:**
 - a. When handling powdered or granular products, use care not to inhale the dust for it is extremely irritating to the lungs.
 - b. Chlorine-bearing compounds are strong bleach agents and should not come in contact with clothing.
 - c. Prepare chlorine-bearing compounds in clean containers, for grease or oil in a container may react violently with the chlorine.
 - d. Wash the skin with water as soon as possible after contact with any chlorine-bearing compounds, for they may cause irritation.
 - e. Read product labels and strictly observe all statements of caution.

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Table 1

Material	% Chlorine in material	Amount to add per 1000 gal. To produce 50 ppm chlorine	Amount to add per 1000 gal. To produce 5 ppm chlorine
Sodium Hypochlorite (liquid laundry bleaches such as Clorox or Purex)	5.25	1 gallon	1 1/2 cups
Sodium Hypochlorite Commercial Strength	12	7 cups	3 cup
Chlorinated Lime (powder)	25	3 1/8 cups	5 tablespoons
Calcium Hypochlorite (B-K Powder)	50	1 1/2 cups	2 1/2 tablespoons
Calcium Hypochlorite (HTH, Perchloron, etc.)	70	1 1/8 cups	2 tablespoons

Note: 16 Tablespoons = 1 cup and 256 Tablespoons = 1 gallon.

For materials not listed above, the percent of available chlorine will be found on the label under "active ingredients"

Table 2

To Determine Amount of Water in Well or Cistern

Circular Well or Cistern	
Diameter of well in feet	Gallons of water per foot of depth
1/2	1 1/2
1	6
2	24
3	53
4	94
5	147
6	212
7	288
8	376
9	472
10	587
11	710
12	846

Length x width x water depth x 7 1/2 = gallons

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EXAMPLES

Circular Well

To disinfect a well that measures 1 foot across and has 250 feet of water in it:
First, find the number of gallons of water in the well from Table 2, page A - 13.

$$6 \times 250 = 1500 \text{ gallons.}$$

Second, determine the material to be used for disinfecting and from Table 1 find the amount of material required for each 1000 gallons of water.

For laundry bleaches 1 gallon is required for each 1000 gallons and there are 1 1/2 thousand gallons of water in the well, so 1 1/2 gallons of laundry bleach are required.

Circular cistern

For a cistern 7 feet across that has 10 feet of water the amount of laundry bleach required would be found by:

$$288 \times 10 = 2880 \text{ gallons of water}$$

$$1 \frac{1}{2} \text{ cups} \times (2880 \text{ divided by } 1000) = 4.3 \text{ cups bleach}$$

Rectangular or Square Cistern

To disinfect a cistern that is 6 feet long, 7 feet wide, and has 12 feet of water in it:
First, find the volume of water in the cistern.

$$6 \times 7 \times 12 \times 72 = 3780 \text{ gallons}$$

Second, determine the material to be used for disinfecting and from Table 1 find the amount of material required for each 1000 gallons of water.

For B-K powder (50 percent chlorine) 2 1/2 tablespoons is required for each 1000 gallons of water and there are 3780 gallons in the cistern.

$$3780 \text{ divided by } 1000 \times 2 \frac{1}{2} = 9.5 \text{ tablespoons of B-K powder required.}$$

V. DISINFECTING A WELL: SHOCK CHLORINATION

A. General Information

1. Private wells are often contaminated with bacteria and other micro-organisms that may cause disease during flooding conditions. You can use a simple procedure called shock chlorination to disinfect a contaminated well. Shock chlorination can be done using ordinary household laundry bleach (containing 5.25% sodium hypochlorite). The goal is to add enough per liter to kill potentially harmful bacteria and viruses. If iron bacteria is a problem, concentrations as high as 800 milligrams per liter may be necessary. Your well should be properly constructed to help prevent possible recontamination. Before you begin:
 - a. Do not chlorinate activated carbon or charcoal filters. Use the "bypass" valve on the filter if there is one. Otherwise, disconnect the filter temporarily during shock chlorination.
 - b. Use rubber gloves, goggles, and a protective apron when handling chlorine solutions. If chlorine gets on the skin, flush immediately with fresh water.
 - c. Never mix chlorine solutions with other cleaning agents, especially ammonia, because toxic gasses may be formed.
 - d. Use plain laundry bleach. Do not use "Fresh-Scent" bleach or other special laundry products to disinfect a well.

B. Shock Chlorination Procedure:

1. Select a time when well water will not be used for at least 24 hours. You may wish to store enough drinking water for this period or do the procedure before you leave for a short trip.
2. Determine the proper amount of bleach to disinfect your well. This depends on the diameter of your well and the height of standing water in the well. The height of standing water is the difference between the well depth and the distance from the top down to water level. For example, if the well is 200 feet and the water level is 100 feet down from the top, then the height of standing water is 100 feet. If this is a 4-inch well, 2 quarts of laundry bleach is needed to raise the chlorine concentration to 200 milligrams per liter. Use Table 1 below as a guide in determining the amount of bleach to use.

Table 1

Standing Water (feet)	Diameter of Well				
	4-inch	6-inch	8-inch	12-inch	24-inch
24	1 pint	1 quart	2 quarts	1 gallon	4 gallons
50	1 quart	2 quarts	1 gallon	2 gallons	8 gallons
100	2 quarts	1 gallon	2 gallons	4 gallons	16 gallons

200	1 gallon	2 gallons	4 gallons	8 gallons	32 gallons
3.	If iron bacteria is a problem, multiply these amounts by 4. A-15				
4.	Mix the proper amount of bleach with water in a 5 gallon or larger container and pour directly into the well.				
5.	Turn on the outdoor faucet nearest the well and let the water run until a strong odor of chlorine is detected. Add more bleach if a strong odor is not present.				
6.	Turn off the faucet. Connect a garden hose to the faucet and attach a spray nozzle to the end of the hose. Thoroughly wash down the entire surface of the well casing with the spray nozzle for at least 15 minutes.				
7.	After washing the inside of the well casing, turn on all outdoor and indoor faucets one at a time until a strong chlorine odor is detected at each location. Turn each faucet off when the chlorine odor is detected.				
8.	Let the chlorinated water stand in the well and plumbing for at least 24 hours. Do not drink the chlorinated water during this period. You may flush toilets, but try to minimize the number of flushes.				
9.	After 24 hours, completely flush the system of chlorine by turning on all outdoor faucets and running them until the chlorine odor can no longer be detected. Do not run the indoor faucets until the odor dissipates to prevent damage to the septic system.				
10.	Finally, turn on the indoor faucets until no chlorine odor is detected. A residual chlorine taste and odor may persist in the water for a few days.				
11.	It is wise to test the water for bacteria a few weeks after shock chlorination to determine if you have a recurring problem. Contact your local Health Department for information on water testing and well protection.				

VI. RESTORING DRINKING WATER

A. General

1. Contact your public water supply directly for further information and consult the local news media for notification when any health advisories have been issued or lifted. Your local water supplier has the most up-to-date information about problems in your area, such as broken water mains, low water pressure or any other possible sources of contamination. As long as adequate water pressure has been maintained through the flood, you should need only to flush your water pipes.

B. Flushing Home Water Lines

1. The best and easiest way to begin flushing your water lines is to use a garden hose and wash off your driveway or patio for half an hour. (You're going to need to do this anyway!) This will avoid overloading the sewage system, whether public or private.

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2. Water pipes in you home that have been submerged in water may be extremely dirty. Clean the exterior of pipes and faucets with regular household cleaner. Briefly turn on hot and cold water at all faucets to remove dirt that may have settled just inside the faucets. Next, squirt a 50 percent water, 50 percent household bleach solution into the faucets. Then flush ALL water pipes as described in Step 3
3. Sequentially flush out all water pipes inside the house. Begin at the faucet nearest the point where the waterline enters the building. This is usually the sink nearest the water meter. Turn on both hot and cold faucets at full blast for three to five minutes. If after this amount of time your water does not become clear, do not use it for consumption. (You may wish to catch water in buckets if your are concerned about overloading your septic tank.) Proceed to the next nearest faucet and repeat. Continue until ALL faucets have been flushed. To avoid wasting hot water, wait until you have flushed all your lines to turn on your hot water heater.
4. Your tap water should now be safe to drink.

C. Disinfecting of Unsafe Drinking Water

1. The following procedures will destroy the usual bacteria and other micro-organisms that may be present in water obtained from a contaminated public water supply system or from alternate emergency sources.
 - a. Heat Disinfecting (boiling):
 1. Strain water through a clean, tightly woven cloth into a clean container to remove any sediment or floating matter.
 2. Boil water vigorously for three to five minutes prior to use for cooking or drinking.
 3. Allow water to cool. To improve the taste, add a pinch of salt to each quart of boiled water or try pouring it back and forth from one clean container to another several times.
 - b. Chemical Disinfecting:
 1. If boiling is not possible, strain the water as in Step 1 above and purify with one of the following chemicals (choice of chemical is based on availability):
 - a. Hypo-chlorite Solutions (PUREX, CLOREX or other household bleach)
 2. Read the label to find the percent of available chlorine in the solution and determine the number of drops needed to disinfect each quart of water from Table 1 below:

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Table 1

Available Chlorine	Clear Water-Drops added per quart	Cloudy Water-Drops added per quart
1 percent	10	20
4 to 6 percent*	2	4
7 to 10 percent	1	2
If not known	10	20

- *Common household bleach*

3. Mix thoroughly by stirring or shaking water in container. Let stand for 30 minutes. A slight chlorine odor should be detectable in the water; if not, repeat the dosage and let stand an additional 15 minutes before using. Water is safe to use.

c. Iodine:

1. Use UPS tincture of iodine; iodine from the medicine cabinet is suitable. Add two to three drops to each quart of clear water or eight to 10 drops to each quart of cloudy water. Mix and let water stand for 30 minutes before using.
2. NOTE: Commercially prepared iodine or chlorine tablets or filtering kits available in drug and sporting goods stores can also be used for disinfecting drinking water. Follow the instructions on the package.

D. Additional

1. Water purified by either boiling or chemical disinfecting should be stored in clean, non-corrodible, tightly covered containers. Containers suitable for water storage include empty vinegar bottles, soft drink jugs and plastic milk containers that have been thoroughly washed and rinsed with the purified water.
2. Freezing does not disinfect water ice cubes must be made from water disinfected as described above.

E. If You Have a Private Well

1. Wells that are destroyed, totally filled with mud or suffered extensive damage must be plugged because they may cause further damage to the groundwater supply. If you want to have the same well re-drilled, you will need to contact a permitted well driller. A list of permitted drillers can be obtained from the Mills County Health Department by calling 527-9699.
2. Wells that are undamaged should be disinfected following the procedures listed below. If muddy water is present, contact a permitted well driller for use and

start-up procedures.

3. Private Well Emergency Disinfecting Procedures

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- a. Pump well until water is clear.
- b. Drop 1 cup chlorine tablets or pour 2 gallons of liquid bleach into top of well, making sure to wash down inside of well casing with water. If you used chlorine tablets, let set 2 hours for tablets to dissolve. It may take longer if well has accumulation of mud.
- c. Pump chlorinated water through all household water lines until noticeable chlorine odor. If chlorine odor is not detected, add additional chlorine until you smell it.
- d. Wash down interior and exterior of well with chlorinated water using a hose.
- e. Let chlorinated water stand in the well and in pipes for 24 hours.
- f. Run water until chlorine smell is no longer detectable.
- g. Have water tested for bacteria. Any water for temporary use should be boiled for three minutes until you receive a satisfactory bacteria test.
- h. If water fails bacteria test, re-chlorinate your well.
- i. Before using the water for drinking, you should have two safe bacteria samples taken at least 5 days apart.
- j. **CAUTION:** Use caution when working on your well to avoid electrical shock from the pump.

VII. WATER POLLUTION

A. Contaminated Surface Water

1. Stay out of flood waters; do not swim, wade, tube or have other recreational contact.
2. Contact with flood waters should be kept to a minimum. Flooded rivers and streams are contaminated with sewage, animal wastes and other harmful contaminants.
3. Avoid recreational boating on rivers and streams in flood stage. Rapidly flowing floodwaters can contain unpredictable currents and eddies and can conceal submerged or moving objects that can damage a boat.
4. Vacate buildings if electric, gas, drinking water and wastewater systems are not working due to flood conditions.
5. If contact with floodwaters is unavoidable, shower or bathe with anti-bacterial soap afterward.

6. If you are injured while working in floodwaters, contact your doctor to see if you need a tetanus shot.

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7. After floodwaters recede, wash flooded buildings with clean water and biodegradable detergent. Thoroughly check and clean all natural gas, electric, drinking water and sewage disposal systems prior to returning to service. Outdoor areas should be washed or sluiced with river water or clean water from hydrants.
8. If you suspect flood waters may be contaminated with petroleum products or other chemicals, contact your local emergency response agency or the nearest regional office.

VIII. HOUSEHOLD CHEMICALS AND HAZARDOUS WASTE

A. Damaged or Unusable Household Chemicals

1. Homeowners returning to their homes after flood waters recede may find products used to care for home and property that are damaged and unusable.
2. Products labeled with words such as POISON, DANGER, WARNING, or CAUTION contains hazardous chemicals. These wastes, commonly referred to as A household hazardous wastes,@ should be separated from other wastes before disposal.
3. Use extreme caution when cleaning up household products in leaking or damaged containers. Wear rubber gloves and avoid breathing any fumes or dust. Do not work around these damaged products in confined or poorly ventilated areas.
4. Check with your local officials and use a household hazardous waste collection program if one is available in your area.

B. Drums, Tanks, and Barrels

1. Most barrels that wash up in the flood are open-burn barrels, trash barrels, or dock barrels.
2. There may be danger in sealed barrels, drums, or tanks with unknown contents. These should be handled by trained people. If you find sealed drums, barrels, or tanks of unknown contents, call your local fire department or law enforcement.
3. If a propane tank is in flood debris, a company distributing gas may be able to identify the tank and return it to its proper location. Propane tanks have serial numbers that help to identify owners and locations.
4. If propane tanks are found and there is reason to believe they may leaking or otherwise unsafe, Contact 911 Immediately.

IX. CLEANERS AND DISINFECTANTS

A. General Information

1. Household cleaners help remove dirt. Disinfectants help stop the growth of disease-causing microorganisms carried in floodwater.
2. Powdered or liquid cleaners and disinfectants are more practical and much less expensive than aerosol products, since large areas will probably need to be cleaned.
3. Buy cleaners and disinfectants in the largest sizes available to reduce their cost. Farm supply, hardware, wallpaper and paint stores often have these products in gallon or pound containers.
4. All products are not suited for all uses. Before using any cleaner or disinfectant, refer to its label for specific directions or precautions. Make sure the product will do the job you want it to. See Table 1 below.
5. Many household cleaners and disinfectants are harsh on hands and may burn the eyes. Protect your hands with waterproof gloves. Avoid contact with eyes. If you splash or spill any product on your skin, wash it off immediately.
6. **DO NOT** mix different types of cleaning products, toxic fumes may be produced causing injury or death.

Table 1
Cleaners and Disinfectants

Type of Cleaner	Uses	Precautions	Additional Suggestions
All purpose detergents (Tide, Wisk, Cheer) or soap (Duz)	Moderately or heavily soiled washable, colorfast textiles. On furniture and appliance surfaces. Painted walls and woodwork and wallpaper. Floors, rugs, and carpets.	Do not use on wool, silk or fabric containing these fiber blends.	Rinse well to remove suds.
Enzyme products (Biz, Axion)	Helpful on tough stains, ground-in dirt and grass stains, restoring whiteness to fabrics.	The use of chlorine bleach will inactivate enzymatic action when both products are used.	
Liquid household cleaner (Top Job, Ajax, Janitor in a Drum) Powdered household cleaner (Spic n Span, Ajax, Comet, Bon Ami)	Removes mud, silt, and greasy deposits from hard surfaces such as painted walls, floors, woodwork, porcelain.	Dilute with water as directed on container for specific uses.	

Type of Cleaner	Uses	Precautions	Additional Suggestions
Household ammonia	Hard surfaces: windows, walls, woodwork, floors, tile, porcelain	Dilute in water. Do not get in eyes. May irritate skin. Do not combine with chlorine bleach.	
Tri-sodium phosphates (TSP)	Wood walls, wood work, floors.	Powder. Dilute in water. Do not get in eyes. May irritate skin. Do not combine with chlorine bleach.	For mildew removal, combine 8 to 10 tablespoons tri-sodium phosphate and 1 gallon water.
Customary (Rocozal, Zephroin, Crew, End-Bac) (Available in janitorial, dairy and poultry supply houses.)	Laundry-safe for all fibers. Helpful in removing musty odors on floors and walls.	May cause some color change.	Add at beginning of rinse cycle.
Pine oil disinfectants (Fyne Pine, Texize-O-Pine)	Laundry-safe for washable clothing.	Do not use on wool or silk. Pine odor will linger on these fabrics.	Add before putting clothes in machine, or dilute in 1 quart water.
Liquid chlorine disinfectants (Clorox, Purex)	Use as rinse on carpets and furniture or in laundry to disinfect or to control mold. Follow instructions for use with colored fabrics.	Do not combine with ammonia. <u>Follow instructions</u> . Bleach can ruin many items. Do not use in rinse water. Do not use on aluminum or on linoleum.	Add bleach before putting clothes in washer or dilute in 1 quart water.
Phenobic disinfectants (Pine-Sol, Al-Pine, Lysol)	Laundry-safe for washables. Bathrooms, plastic or ceramic tile floor.	Do not use on wool or silk.	Add in wash or rinse cycle.

*Where trade names are used, no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

X. SEPTIC TANK FAILURES

A. General Information

1. Many septic tank systems at individual properties have been flooded. Most of these systems will remain inoperable until the floodwaters recede and the ground where the sewage is absorbed becomes somewhat dry. Some of these systems may be so damaged that repairs will be required before they will work again.
2. One big problem with a septic tank that doesn't work is the release of untreated sewage onto the top of the ground or into stagnant pools left behind by the flood. The pooled sewage from these tanks can be a significant health hazard. The other big problem is the backup of sewage into the building, caused by a blockage that results from the damaged tank system or piping.
3. Recommendations to the Public
 - a. Avoid using the house plumbing system if the septic tank or the lateral

field is still under water.

- b. Do not use the plumbing system if sewage is backing up into the house.
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- c. Carefully investigate the cause of sewage backups. Check the septic tank to see if it has shifted, or if the grease layer in the top of the tank has blocked the inlet or outlet pipes. Any of the sewage pipes either leading to the septic tank or to the lateral field may have become broken or filled with silt.
 - d. Try to minimize the amount of mud entering the plumbing system. Mud will fill the septic tank and can cause the lateral lines to become clogged.
 - e. Individual lagoons that have silted in or have been physically damaged should be repaired as soon as possible before long-term use is resumed.
 - f. Contact your local county sanitarian for assistance with repairs or construction of new septic tank systems.
 - g. Avoid contact with the sewage from the septic tank systems that aren't working. Raw sewage is a public health problem and can contain diseases.

XI. CONTROLLING SNAKES AFTER THE STORM or FLOOD

A. General Information

- 1. Many snakes, like other residents in the path of storms and floods, have been displaced and left homeless. As a result, many of these animals are seeking shelter and food in areas close to people. These areas, out of the way of high water, include the inside of homes, storage sheds, barns and other buildings. Damaged structures have a higher probability of attracting snakes because of the many accessible entrances. In addition, displaced snakes may be found under debris scattered by the flood or in debris piles created during the cleanup effort.
- 2. There are many more species of nonpoisonous snakes than poisonous snakes. It's important to realize that both poisonous and nonpoisonous snakes are beneficial to people, because they keep the rodent populations down. Since rodents are also displaced by flooding conditions, this is especially important.

B. Control Tips

- 1. Outdoors
 - a. Watch where you place your hands and feet when removing or cleaning debris. If possible, don't place your fingers under debris you intend to move.
 - b. Wear snake-proof boots at least 10 inches high or snake leggings in heavy debris areas where snakes are likely to be found.
 - c. Never step over logs or other obstacles unless you can see the other side.

- c. If you encounter a snake, step back and allow it to proceed on its way. Snakes usually do not move fast, and a person can easily retreat back from its path.

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2. Indoors

- a. If you find a snake in your home, try to isolate it within a room or small area.
- b. Nonpoisonous snakes can be captured by pinning the snake down with a long stick or pole, preferably forked at one end, and then removed by scooping them up with a flat-blade shovel.
- c. If you are uncomfortable about removing the snake yourself, seek someone within the community who has experience handling snakes to do it for you. A good starting point is your local animal control shelter or sheriff's department.
- d. As a last resort, you may need to kill a poisonous snake. Club it with a long stick, rod or other tool such as a garden hoe. Never try to kill a poisonous snake with an instrument that brings you within the snake's striking range (usually estimated at less than one-half the total length of the snake).
- e. Exclude snakes from your home by sealing all openings 3-inch and larger. Check areas such as the corners of doors and windows, around water pipes and electrical service entrances. Holes in masonry foundations should be sealed with mortar. Holes in wooden buildings can be sealed with fine 1/8-inch mesh hardware cloth or sheet metal.
- f. Make your yard unattractive to snakes. Remove debris from around the home as soon as possible. This attracts rodents that snakes feed on and also provides shelter for snakes. Vegetation around the home should be kept closely mowed.
- g. No legal toxicants or fumigants are registered to control snakes. Repellents are available but are not effective.
- h. If you are bitten by a poisonous snake, don't try to treat the bite yourself. Go to the nearest hospital for treatment immediately. If the bite breaks the skin, even nonpoisonous snakes can cause infections, so seek medical attention.

XII. CONTROLLING RODENTS AFTER A FLOOD

A. General Information

- 1. Due to the recent floods, many rodents have been displaced from their natural habitat. As a result, these animals are seeking areas that can provide food and shelter. Unfortunately, many of these new rodent havens are in homes, sheds, barns and other buildings.
- 2. Structures damaged by the floods are particularly attractive and provide easy access

to rodents. The unwelcome pests can damage property and, in extreme cases, pose a potential health problem.

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3. Control Tips

a. Rats and mice

1. As soon as possible, remove all debris that could provide protective cover for rodents from around homes and other buildings.
2. Keep lawn and field vegetation mowed at a low level to eliminate protective cover for rodents.
3. Remove any potential food source such as household trash, waste grain or other foods that might attract rats and mice.
4. Close all openings into buildings, such as around water pipes, electrical wires, vents and doors, with $\frac{1}{8}$ -inch mesh hardware cloth or sheet metal.
5. Registered toxicant baits with zinc phosphide or anticoagulants are available and effective in controlling rats and mice. Use of bait stations will increase the success of rodenticides in rat and mouse control.
6. Snap traps are effective in capturing nuisance rats and mice. Successful trap baits for the trigger mechanism include bacon skin, peanut butter and oatmeal, and oatmeal paste. Check traps each day.

b. Squirrels in homes and buildings

1. Trees should be trimmed to prevent squirrels from jumping onto roofs.
2. Prevent squirrels from traveling on wires to houses and buildings by installing 2-foot sections of lightweight plastic pipe 2 or 3 inches in diameter. Slit pipe lengthwise, spread open and place over wire. The pipe will rotate on the wire and cause traveling squirrels to fall.
3. Close openings to attics and eaves of homes and other buildings with heavy 2-inch wire mesh or sheet metal.
4. In closed attics, naphthalene (moth balls), methyl nonyl ketone crystals or paradichlorobenzene (moth crystals) may work temporarily as a repellent. Use 1 to 2 pounds spread evenly throughout the attic; however, greater amounts may be needed if space is very large.
5. Traps, including No. 0 or 1 leg hold traps, box traps and cage traps, will catch squirrels. Regular rat-size traps will catch flying squirrels. Good baits are apples, cracked corn and pecans removed from the shell, peanut butter and sunflower seeds. Where firearms are

permitted, shooting reduces squirrel numbers. Check with law enforcement officials and wildlife conservation agents in your area.

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XIII. CLEANING FLOOD-SOILED CLOTHING

A. General Information

1. Clean textile items as soon as possible to prevent further staining. Do not immerse flood-soiled clothing in hot water. If flood waters carried red or yellow clay, hot water may set rust-colored stains. The following procedures are recommended for cleaning flood-soaked garments.

B. Washable clothing (non-woolen)

1. Line dry articles thoroughly before treating.
2. Brush off loose dirt.
3. Rinse several times in cool water to remove as much mud as possible.
4. Work a heavy duty liquid detergent or heavy concentration of detergent into stain. Let stand 15-30 minutes.
5. When no more dirt can be rinsed out, machine wash using warm water and detergent.
6. Sanitize. Flood water may be contaminated with sewage wastes. Bacteria from flood waters can remain alive on fabrics for a long time. Four types of disinfectants will kill bacteria, use whichever is appropriate for the particular fabric as listed below.
 - a. Quaternary compounds (Roccal, Zephrein) are safe for all fibers, will not damage wool or silk, but may cause some color change. Add these disinfectants at the beginning of the rinse cycle. For top-loading automatics, add 4 tablespoons Roccal or 2 tablespoons Zephrein. For front-loading automatics, add 2 tablespoons Roccal or 1 tablespoon Zephrein. Quaternary compounds are available in drug stores and dairy or janitorial supply houses.
 - b. Liquid chlorine bleaches (Clorox, Purex) are safe for all fibers except wool, silk, or resin-coated (waterproofed or water repellent) fabrics. Add bleach to water before putting the clothes into the machine or dilute bleach in 1 quart water before adding it to the wash cycle. Do not use bleach in the rinse cycle. Use 1 cup in top-loading automatics and 2 cup in front-loading automatics. Chlorine bleaches are available in grocery stores.
 - c. Pine oil disinfectants (Fyne Pine, King Pine, Pine-o-Pine, Texize-o-Pine) are safe for washable clothing. Do not use them on wool or silk, because the pine odor will linger in these fabrics. Check the label to be sure the product contains at least 80% pine oil. Add pine oil at the beginning of the wash cycle, preferably before putting the clothes in the machine. Otherwise, dilute it in one quart water before adding it to the machine. Use : cup in top-loading

automatics, and 2 cup in front-loading automatics. Pine oil disinfectants are available in grocery and drug stores.

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- d. Phenolic disinfectant (Pine-Sol, All-Pine, Sea-Air) are safe for washables. Avoid using them on wool and silk, because odor will remain. Use 1 cup in top-loading automatics, and 2 cup + 2 tablespoons in front-loading automatics. Add disinfectants either in the wash or rinse cycle. Phenolic disinfectants are available in grocery stores.
7. Some clothing may have developed mildew stains from prolonged dampness. If stains remain after washing with detergent and water, apply lemon juice and salt or a bleach solution (1 tablespoon bleach to a pint of lukewarm water). Spot-test colored garments before bleaching them.

C. Washable clothing (woolen)

1. Line dry articles thoroughly before treating.
2. Shake and brush garments well to remove loose dirt.
3. Soak in lukewarm water to remove soil held in fibers.
4. Wash garment in thick suds using a mild soap or a detergent recommended for fine fabrics. Use a disinfectant recommended for wool (see above). Do not use liquid chlorine bleach on wool.
5. Work suds gently into garment using as little agitation as possible.
6. If necessary, wash again in lukewarm suds.
7. Rinse carefully several times in lukewarm water.
8. Dry woolens in a warm place, but not in direct sunlight or near heat. Do not allow woolen garments to freeze. Spread sweaters and other knit garments on tables and shape to desired dimensions.
9. While garment is still damp, press with a medium-hot iron, or allow garment to dry and press on the wrong side with a steam iron. If you must press on right side of the fabric, protect the surface with a pressing cloth. Leave wool slightly damp but do not hang until items are dry. Woolen items may stretch out of shape.

D. Dry-cleanable clothing

1. Take any flood-soiled garments ordinarily commercially cleaned to the dry cleaners. Before taking them to the cleaners:
2. Allow garments to dry slowly at room temperature. Do not hang garments near a warm stove or radiator. Be sure garment is dry before you take it to the cleaners.
3. Shake and brush well to remove as much dirt as possible.

4. Tell the cleaner the cause of stains, and the fiber content of the garment if possible.

Appendix B
Donation Management

Guidelines - - - - - B-2

I. GUIDELINES FOR SENDING IN-KIND DONATIONS TO DISASTER VICTIMS

A. Contributions of Cash Are Often The Best Donation

1. Monetary contributions allow professional relief organizations to purchase exactly what is most urgently needed by disaster victims and to pay for the transportation necessary to distribute those supplies. Unlike in-kind donations, cash donations entail no transport cost. In addition, cash donations allow relief supplies to be purchased at locations as near to the disaster site as possible. Supplies, and particularly food, when purchased locally has the advantage of stimulating local economies, and ensuring the supplies will arrive as quickly as possible.
2. The Federal Emergency Management Agency (FEMA) has an 800 number that operates during major disasters that gives a partial listing of recognized relief organizations that are operating at the disaster site. It is important to know the reliability of the organization you choose.

B. Confirm There is a Need

1. Exactly what is needed can be confirmed by checking with a relief organization that has personnel working on-site at the disaster, or by calling the FEMA 800 number or a state 800 number set up specifically for a given emergency. These organizations regularly update their information so it can be known what items are specifically needed and what are not. Different disasters create different needs. Earthquakes very often do not affect a food supply or necessitate large contributions of clothing. The widespread assumption that all disasters create shortages of food and clothing has many times resulted in large collections of these items which have clogged transportation systems and placed undue strain on the volunteer staff at a disaster site. Sometimes even materials in excellent condition may be inappropriate for cultural reasons. Local climate and culture of the affected area must be considered.

C. Donate Through an Organization

1. Before starting a collection of goods to send to a disaster site, it is essential to locate a reliable relief organization willing to receive the shipment of donated goods. Distributing relief supplies requires personnel and financial resources within the affected area. When unsolicited truckloads of items arrive at a disaster site there is often no place to unload the goods. Too often, it is left in an empty lot to be plundered or rained on and eventually becomes part of the garbage that must be removed during the cleanup phase of the disaster response. Poorly planned truckloads of supplies not meeting the needs of the receiving organization may end up filling vital space in warehouses.

Appendix C Disaster Assessment Forms and Placards

FORMS:

Damage Levels & Conditions

Rapid Assessment Survey

Residential & Business Assessment

Disaster Assessment Summary

PLACARDS:

GREEN PLACARD - INSPECTED LAWFUL OCCUPANCY PERMITTED

YELLOW PLACARD - INSPECTED RESTRICTED USE

RED PLACARD - INSPECTED UNSAFE - DO NOT ENTER OR OCCUPY

INSPECTED

LAWFUL OCCUPANCY PERMITTED

DAMAGE MAY BE PRESENT - OCCUPY AT YOUR OWN RISK

Mills County Emergency Management Agency - Recovery Task Force
418 Sharp St. - Courthouse - Glenwood IA 51534-6293 (712) 527-3643

Authority - Mills County Recovery Plan Chapter IV C (5c)

INSPECTED

LAWFUL OCCUPANCY PERMITTED

DAMAGE MAY BE PRESENT - OCCUPY AT YOUR OWN RISK

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INSPECTED RESTRICTED USE

DAMAGE:

RESTRICTIONS:

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INSPECTED UNSAFE - DO NOT ENTER OR OCCUPY

DAMAGE:

Mills County Emergency Management Agency - Recovery Task Force
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Authority - Mills County Recovery Plan Chapter IV C (5c)

Appendix D
Debris Management and Storage

Mission -	-	-	-	-	-	-	-	-	D-2
Situation -	-	-	-	-	-	-	-	-	D-2
Organization -	-	-	-	-	-	-	-	-	D-2
Concept of Operations - -			-	-	-	-	-	-	D-3

I. MISSION

To facilitate and coordinate the removal, collection, and disposal of debris following a disaster to mitigate against any potential threat to the health, safety, and welfare of the impacted citizens, expedite recovery efforts in the impacted area, and address any threat of significant damage to improved public or private property.

II. SITUATION

Natural and man-made disasters precipitate a variety of debris that includes, but is not limited to, such things as trees, sand, gravel, building/construction materials, vehicles, personal property, etc.

The quantity and type of debris generated from any particular disaster is a function of the location and kind of event experienced, as well as its magnitude, duration, and intensity.

The quantity and type of debris generated, its location, and the size of the area over which it is dispersed directly impacts the type of collection and disposal methods used to address the debris problem, associated costs incurred, and the speed with which the problem can be addressed.

In a major or catastrophic disaster, many State agencies and local governments have difficulty in locating staff, equipment, and funds to devote to debris removal, in the short as well as long term.

Private contractors play a significant role in the debris removal, collection, reduction, and disposal process of State agencies and local governments.

The debris management program implemented by State agencies and local governments will be based on waste management approach of reduction, reuse, reclamation, resource recovery, incineration, and land filling, respectively.

III. ORGANIZATION

The Mills County Secondary Roads Department is responsible for the debris removal function in the unincorporated areas of the County. Each community's Department of Public Works (if they have one), is responsible for the debris removal function within their jurisdictions. Mills County Secondary Roads and each community will work in conjunction with designated support agencies, utility companies, waste management firms, and trucking companies, to facilitate the debris clearance, collection, reduction, and disposal needs of Mills County following a disaster.

Because of the limited quantity of resources and service commitments following a disaster, Mills County will be relying heavily on private contractors to remove, collect, and manage debris for reuse, resource recovery, reduction, and disposal. Using private contractors instead of government workers in debris removal activities has a number of benefits. It shifts the burden of conducting the work from State and local government entities to the private sector, freeing up government personnel to devote more time to their regularly assigned duties. Private contracting also stimulates local, regional, and State economies impacted by the storm, as well as maximizes State and local governments' level of financial assistance from the Federal government. Private contracting allows the State and its political subdivisions to more closely tailor their contract services to their specific needs. The entire process (e.g., clearance, collection, transporting, reduction, and disposal, etc) or segments of the process can be contracted out.

IV. CONCEPT OF OPERATIONS

A. General Information

1. The Mills County Secondary Roads Department will be responsible for coordinating debris removal operations in the unincorporated areas of the County. Each community's Department of Public Works (if they have one), is responsible for the debris removal function within their jurisdictions. Mills County and each community will be responsible for removing debris from property under its own authority, as well as from private property when it is deemed in the public interest. To this end, Secondary Roads and each community will stage equipment in strategic locations locally as well as regionally, if necessary, to protect the equipment from damage, preserve the decision maker's flexibility for employment of the equipment, and allow for the clearing crews to begin work immediately after the storm.
2. The Secondary Roads Department and each community will also develop and maintain a list of approved contractors who have the capability to provide debris removal, collection, and disposal in a cost-effective, expeditious, and environmentally sound manner following a disaster. The listing will categorize contractors by their capabilities and service area to facilitate their identification by State agencies and local governments, as well as ensure their effective utilization and prompt deployment following the disaster.

B. CONTRACTS AND COOPERATIVE AGREEMENTS

1. Sample contracts with a menu of services and generic scopes of work will be deployed prior to the disaster to allow Mills County and its communities to more closely tailor its contracts to its needs, as well as expedite their implementation in a prompt and effective manner.
2. Every State agency and political subdivision will be responsible for managing the debris contract from project inception to completion unless the government entities involved are incapable of carrying out this responsibility because of the lack of adequate resources. In these circumstances, other State and Federal agencies will be identified to assume the responsibility of managing the debris contract. Managing the debris contract would include such things as monitoring of performance, contract modifications, inspections, acceptance, payment, and closing out of activities.
3. Mills County is encouraged to enter into cooperative agreements with other State agencies and local governments to maximize public assets. The development of such agreements must comply with the guidelines established in their agency procurement manual. All State agencies and local governments that wish to participate in such agreements should be identified prior to the development and implementation of the agreement.

C. SITE SELECTION

1. Debris storage and reduction sites will be identified and evaluated by interagency site selection teams comprised of a multi-disciplinary staff who are familiar with the area. A listing of appropriate local, State, and Federal contacts will be developed by the appropriate agencies to expedite the formation of the interagency, multi-disciplinary site selection teams.

2. Initially, debris will be placed in temporary holding areas until such time as a detailed plan of debris collection and disposal is prepared. This is not anticipated until after the local traffic has been restored. Temporary debris collection sites should be readily accessible by recovery equipment and should not require extensive preparation or coordination for use. Collection sites will be on public property when feasible to facilitate the implementation of the mission and mitigate against any potential liability requirements. Activation of sites will be under the control of the Mills County Engineer or community official, and will be coordinated with other recovery efforts through the Emergency Operations Center.
3. Site selection criteria will be developed into a checklist format for use by these teams to facilitate identification and assessment of potential sites. Criteria will include such factors of ownership of property, size of parcel, surrounding land uses and environmental conditions, and transportation facilities that serve the site.

D. DEBRIS REMOVAL PRIORITIES

1. The debris removal process must be initiated promptly and conducted in an orderly, effective manner in order to protect public health and safety following a major or catastrophic event. To achieve this objective, the first priority will be to clear debris from key roads in order to provide access for emergency vehicles and resources into the impacted area. The need and demand for critical services will be increased significantly following a disaster. Therefore, the second priority that debris removal resources will be assigned is providing access to critical facilities pre-identified by State and local governments. The third priority for the debris removal teams to address will be the elimination of debris related threats to public health and safety. This will include such things as the repair, demolition, or barricading of heavily damaged and structurally unstable buildings, systems, or facilities that pose a danger to the public. Any actions taken to mitigate or eliminate the threat to the public health and safety must be closely coordinated with the owner or responsibility party. If access to the area can be controlled, the necessary actions can be deferred.

E. DEBRIS CLASSIFICATION

1. To facilitate the debris management process, debris will be segregated by type. It is recommended that categories of debris established for recovery operations will be standardized. The State will adapt the categories established for recovery operations by the U.S. Army Corps of Engineers following Hurricane Andrew. Definition of classifications of debris are as follows:
 - a. Burnable Materials: Burnable material will be of two types with separate burn locations:
 1. Burnable Debris: Burnable debris includes, but is not limited to, damaged and disturbed trees; bushes and shrubs; broken, partially broken, and severed tree limbs; and bushes. Burnable debris consists predominately of trees and vegetation. Burnable debris does not include garbage or construction and demolition material debris.

2. Burnable Construction Debris: Burnable construction and demolition debris consists of non-creosote structural timber, wood products, and other materials designated by the coordinating agency representative.
- b. Non-burnable Debris: Non-burnable construction and demolition debris includes, but is not limited to, creosote timber, plastic, glass, rubber, and metal products, sheet rock, roofing shingles, carpet, tires, and other materials as may be designated by the coordinating agency. Garbage will be considered non-burnable debris.
- c. Stumps: Stumps will be considered tree remnants exceeding 24 inches in diameter; but no taller than 18 inches above grade, to include stump ball. Any questionable stumps shall be referred to the designated coordinating agency representative for determination of its disposition.
- d. Ineligible Debris: Ineligible debris to remain in place includes, but is not limited to, chemicals, petroleum products, paint products, asbestos, and power transformers.

Modifications to these categories can be made as needed. Hazardous and toxic materials/contaminated soils and debris generated by the event will be handled in accordance with Federal, State, and local regulations.

2. Any material that is found to be classified as hazardous or toxic waste (HTW) shall be reported immediately to the designated coordinating agency representative. At the coordinating agency representative's direction, this material shall be segregated from the remaining debris in such a way as to allow the remaining debris to be loaded and transported. Standing broken utility poles, damaged and downed utility poles and appurtenances, transformers and other electrical material will be reported to the coordinating agency representative. Emergency workers shall exercise due caution with existing overhead and underground utilities and above ground appurtenances, and advise the appropriate authorities of any situation that poses a health or safety risk to workers on site or to the general public.

F. DEBRIS MANAGEMENT ACTIONS

1. Normal Operations
 - a. Develop local and regional resource list of contractors who can assist local governments in all phases of debris management.
 - b. Develop sample contracts with generic scopes of work to expedite the implementation of their debris management strategies.
 - c. Develop mutual aid agreements with other State agencies and local governments, as appropriate, following guidelines established in agency procurement manual.
 - d. Identify and pre-designate potential debris storage sites for the type and quantity of debris anticipated following a catastrophic event.
 - e. Pre-identify local and regional critical routes in cooperation with contiguous and regional jurisdictions.

- f. Develop site selection criteria checklists to assist in identifying potential debris storage sites.
 - g. Identify and coordinate with appropriate regulatory agencies regarding potential regulatory issues and emergency response needs.
 - h. Develop the necessary right of entry and hold harmless agreements indemnifying all levels of government against any potential claims.
 - i. Establish debris assessment process to define scope of problem.
 - j. Develop and coordinate pre-scripted announcements with the Public Information Office (PIO) regarding debris removal process, collection times, temporary storage sites, use of private contractors, environmental and health issues, etc.
2. Increased Readiness (A natural or man-made disaster is threatening the local area)
- a. Review and update plans, standard operating procedures, generic contracts, and checklists relating to debris removal, storage, reduction, and disposal process.
 - b. Alert local departments that have debris removal responsibilities ensuring that personnel, facilities, and equipment are ready and available for emergency use.
 - c. Relocate personnel and resources out of harms way and stage in areas where they can be effectively mobilized.
 - d. Review potential local, regional, and debris staging and reduction sites that may be used in the response and recovery phases in the context of the impending threat.
 - e. Review resource listing of private contractors who may assist in debris removal process. Make necessary arrangements to ensure their availability in the event of the disaster.
3. Response
- a. Activate debris management plan, coordinate with needs assessment team.
 - b. Begin documenting costs.
 - c. Coordinate and track resources (public and private).
 - d. Establish priorities regarding allocation and use of available resources.
 - e. Identify and establish debris temporary storage and disposal sites (local and regional).
 - f. Address any legal, environmental, and health issues relating to the debris removal process.
 - g. Continue to keep public informed through the PIO.

4. Recovery

- a. Continue to collect, store, reduce, and dispose of debris generated from the event in a cost-effective and environmentally responsible manner.
- b. Continue to document costs.
- c. Upon completion of debris removal mission, close out debris storage and reduction sites by developing and implementing the necessary site restoration actions.
- d. Perform necessary audits of operation and if applicable, submit claim for Federal assistance.

**Appendix E
Disaster Recovery Programs**

Disaster Recovery Programs

The following abbreviations are used throughout this appendix in the columns “Activating Mechanism” and “Eligibility”: presidential declaration (PD); available without declaration (AWD); federal agency (F); state agency (S); locality (L); individual /family (I); non-profit organization (N); Native-American tribe (T); businesses (B); and not provided (N/P).

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Emergency Haying and Grazing	Agriculture, Dept. of (USDA), Farm Service Agency (FSA)	Emergency authority to harvest hay or to graze land devoted to conservation and environmental uses under the Conservation Reserve Program	AWD	I/B
Emergency Loans	USDA, FSA	Low-interest loans to family farmers and ranchers for production losses and physical damage	PD; designated by Secretary of Agriculture or Administrator, FSA (physical losses only)	I/B
Noninsured Crop Disaster Assistance Program	USDA, FSA	Direct payments to reduce financial losses resulting from a natural disaster that causes production loss or prevents planting of crops grown commercially for food or fiber, for which federal crop insurance is not available	AWD	I
Emergency Conservation Program	USDA, FSA	Cost-share payments to rehabilitate farmlands damaged by natural disasters and to carry out emergency water conservation or water-enhancing measures during times of severe drought, in cases when the damage or drought is so severe that federal assistance is necessary	AWD	I/B
Agricultural Marketing Transition Act (AMTA) Program	USDA, FSA	Direct payments to eligible producers of program crops that comply with AMTA requirements	AWD	I/B

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Emergency Food Assistance (Emergency Food Stamp and Food Commodity Program)	USDA, Food and Nutrition Service (FNS)	Direct payments to states for specified uses.	PD; declaration by the Secretary of Agriculture	S/I
Food Distribution	USDA, FNS	Donations of USDA-purchased foods.	PD; declaration by Secretary of Agriculture and compliance with eligibility criteria	F/S/L/N
Emergency Watershed Protection (EWP)	USDA, Natural Resources Conservation Service (NRCS)	Direct payments and technical assistance to install structural and nonstructural measures to relieve imminent threats to life and/or property, and to purchase floodplain easements. Technical assistance, such as site evaluations, design work, and installation inspections, also are provided through the program	AWD; triggered by state NRCS Conservationist	S/L/N/B/I
Water Resources	USDA, NRCS	Project grants for the installation of preventive measures such as dams, channels, flood warning systems, purchasing easements, floodplain delineation, and land treatment. Advisory and counseling services are also available.	N/P	S/L/N
Resource Conservation and Development (RC&D)	USDA, NRCS	Technical assistance and loans to finance local project costs. Projects may include: land and water conservation; resource improvements; recreational development; and waste water disposal projects.	AWD	L/N

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
River Basin Project	USDA, NRCS	Technical assistance. Special priority is given to projects designed to solve problems of upstream rural community flooding; water-quality improvement that comes from agriculture non-point sources; wetland preservation; and drought management for agriculture and rural communities. Special emphasis is placed on helping state agencies develop strategic water resource plans	AWD; triggered by NRCS State Conservationist	F/S/L
Soil Survey	USDA, NRCS	Technical assistance. Objective is to maintain up-to-date, published surveys (and soil survey data in other formats) of counties or other areas of comparable size for use by interested agencies, organizations, and individuals; and to assist in the use of this information	N/P	S/L/N/B/I
Federal Crop Insurance Program	USDA, Risk Management Agency (RMA)	Direct payments of insurance claims. Insurance against unavoidable causes of loss, such as adverse weather conditions, fire, insects, or other natural disasters beyond the producer's control.	No activating mechanism is needed; but availability is based on crop-specific sales, closing dates, and the availability of crops in particular counties.	I
Business and Industrial Loan Program (B&I)	USDA, Rural Business Service	Guaranteed and direct loans up to \$10 million. Possible disaster uses include drilling wells, purchasing water, or tying into other water programs.	AWD	B/N/T and public bodies
Farm Labor Housing and Grants	USDA, Rural Housing Service (RHS)	Loans and grants to provide housing and E-4 related facilities for	No Deadlines	I/B

		domestic farmers.		
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The following abbreviations are used throughout this appendix in the columns "Activating Mechanism" and "Eligibility": presidential declaration (PD); available without declaration (AWD); federal agency (F); state agency (S); locality (L); individual /family (I); non-profit organization (N); Native-American tribe (T); businesses (B); and not provided (N/P).

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Rural Housing Site Loans	USDA, RHS	Loans on the purchase and development of housing and necessary equipment that becomes a permanent part of the development (e.g., water and sewer lines)	AWD	N
Rural Rental Housing Loans	USDA, RHS	Loans for the purchase, building, or repair of rental housing. Funds can also be used to provide water and waste disposal systems.	AWD	I/S/L/B
Water Assistance Grants, Emergency Community (ECWAG)	USDA, Rural Utilities Service (RUS)	Project grants to help rural residents obtain adequate water supplies.	PD	S/L/N
Water and Waste Disposal Loans and Grants	USDA, RUS	Project grants, direct and guaranteed loans to develop, replace, or repair water and waste disposal systems in rural areas and towns having populations of 10,000 or less.	AWD	L/N/T
Voluntary Organizations Recovery Assistance	American Red Cross, Mennonite Disaster Service, the Salvation Army, and member organizations of the National Voluntary Organizations Active in Disasters	Mass care (sheltering and feeding), welfare inquiries, health and mental health services, child care, home repairs (labor and funding), emergency communications; debris removal, burn services, cleaning supplies, personal property, distribution of supplies, transportation, loan personnel, and other specialized programs and services.	Disaster event.	I

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Economic Adjustment Program B Disaster Economic Recovery Assistance	Commerce, Department of (DOC), Economic Development Administration (EDA)	Planning and technical assistance grants to state and local governments for strategic recovery planning and implementation to focus on job retention/creation to help offset the economic impacts of a major disaster.	PD; requires supplemental appropriation (SA)	S/L/N/T
Economic Adjustment Program B Disaster Economic Recovery Assistance	DOC, EDA	Revolving loan fund grants to state and local governments to provide a source of local financing to support and economic recovery after a major disaster where financing is insufficient or unavailable.	PD; SA	S/L/N/T
Economic Adjustment program B Disaster Economic Recovery Assistance	DOC, EDA	Infrastructure construction grants to address local recovery implementation needs for new or improved publicly owned infrastructure after a major disaster, support job creation and retention, leverage private investment, and help the overall economic recovery of the disaster-impacted area.	PD; SA	S/L/N/T
Disaster Relief, Corporation for National Service (CNS) Grantees	CNS	Program grants designed to provide long-term disaster relief services and alleviate community needs arising from a disaster.	PD	S/N
Beach Erosion Control Projects	Defense, Department of (DOD), Army Corps of Engineers (USACE)	Specialized services. USACE designs and constructs the project.	Decision of the Chief of Engineers	S/L
Emergency Rehab of Flood Control Works or Federally Authorized Coastal Protection Works	DOD, USACE	Specialized Services to assist in the repair and restoration of public damaged by flood, extraordinary wind, wave, or water action.	Approval by HQ-USACE	S/L/N/I

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Emergency Water Supply and Drought Assistance Programs	DOD, USACE	Emergency supplies of clean drinking water for human consumption and construction of wells.	Assistant Secretary of the Army for Civil Works designates the area as A drought distressed@	L
Flood and Post-Flood Response Emergency Operations	DOD, USACE	Specialized services, such as flood fighting and rescue, protection of federally constructed shore or hurricane projects, and post-flood response assistance.	Designation by USACE district commander	S/L
Watercourse Navigation: Protecting, clearing, and Straightening Channels	DOD, USACE	Specialized services, such as clearing or removing unreasonable obstructions to navigation in rivers, harbors, and other waterways or tributaries.	Decision of the Chief of Engineers	S/L
Community Disaster Loan Program	Federal Emergency Management Agency (FEMA)	Program provides loans not greater than 25% of the local government's annual operating budget.	PD	L
Cora C. Brown Fund	FEMA	Grants to disaster victims for unmet disaster-related needs.	PD, designation for individual assistance.	I
Crisis Counseling Assistance and Training Program (CCP)	FEMA; Department of Health and Human Services (HHS)	Grants to states providing for short-term counseling services to disaster victims.	Governor=s request.	I, via S
Fire Suppression Assistance Program	FEMA	Project Grants. FEMA approves a grant to a state on the condition that the state takes measures to mitigate natural hazards, including consideration of nonstructural alternatives.	Decision by FEMA.	S

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Hazard Mitigation Grant Program (HMGP)	FEMA	Project grants to implement hazard mitigation plans and prevent future loss of lives and property.	PD	L/N, via S
Individual and Family Grant Program (IFG)	FEMA	Grants to individuals administered by the state. Objective is to provide funds for the expenses of disaster victims that cannot be met through insurance or other assistance programs.	PD, designation for individual assistance. Requires specific request by state governor.	I, via S
Legal Services	FEMA	Free legal advice and referrals. Assistance includes: help with insurance claims; counseling on landlord-tenant and mortgage problems; assistance with home repair contracts and consumer protection matters; replacement of legal documents; estate administration; preparation of guardianship and conservatorships; and referrals.	PD, designation for individual assistance	I
National Flood Insurance Program (NFIP)	FEMA	Insurance benefits against losses from floods, mudflow, or flood-related erosion.	AWD	I/B/S
NFIP, Community Assistance Program	FEMA	Grants to states for technical assistance to resolve floodplain management issues.	AWD	S/L
Public Assistance Program (PA)	FEMA	Project grants. Funds can be used for clearing debris; emergency measures, and repairing or replacing damaged structures, roads, utilities, and public buildings and infrastructure.	PS, designated for public assistance	L/N, via S
Temporary Housing Program	FEMA	Direct-payment grants and services. Grants include transient accommodation reimbursement, home repair, rental, and mortgage assistance. Services may include a mobile home.	PD, designation for individual assistance	I

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Financial Institutions, Regulatory Relief for Federally Insured	Federal Deposit Insurance Corporation (FDIC) and other Federal Regulatory Agencies	Specialized services. Supervisory agencies can grant regulatory relief to insured institutions. Regulatory relief includes: lending assistance; extensions of reporting and publishing requirements; waivers from appraisal regulations; and implementation of consumer protection laws.	PD; other disaster that affects the ability of a federally insured financial institution to provide normal services.	N/B
Donation of Federal Surplus Personal Property	General Services Administration (GSA)	Donations of surplus personal property to eligible recipients.	N/P	S/L/N/public airports
Disposal of Federal Surplus Real Property	GSA	Sale, exchange, or donations of property and goods.	N/P	S/L/N
Disaster Assistance for Older Americans	HHS, Administration on Aging	Direct payments to state agencies focused on aging-related services.	PD	I, via S
Mental Health Disaster Assistance	HHS, Public Health Service	Project grants to provide emergency mental health and substance abuse counseling to individuals affected by a major disaster.	Supplemental appropriation by Congress relating to PD.	I, via S
Community Development Block Grant (CDBG) Program B Entitlement Grants	Housing and Urban Development, Department of (HUD), Community Planning and Development (CPD)	Formula grants to entitlement communities. Preferred use of funding is for long-term needs, but funding may also be used for emergency response activities.	PD	L
CDBG B State=s Program	HUD, CPD	Formula grants to states for non-entitlement communities. Preferred use of funding is for long-term needs, but funding may also be used for emergency response activities. States establish methods of fund distribution.	PD	L, via S

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Mortgage Insurance for Disaster Victims Program (Section 203 (h))	HUD	Provides mortgage insurance to protect lenders against the risk of default on loans to qualified disaster victims whose homes are located in a presidentially designated disaster area and were destroyed requiring reconstruction/replacement. Insured loans may be used to finance the purchase or reconstruction of a one-family home that will be the principal residence of the homeowner.	PD	I
Reclamation States Emergency Drought Relief Act of 1991	Interior, Department of the (DOI), Bureau of Reclamation	Loans; grants; use of facilities; construction; management and conservation activities; and purchase of water for resale or for fish and wildlife services. Temporary drought assistance may include the drilling of wells, installation of equipment, improved reporting of conditions.	Request for drought assistance and approval by Commissioner of Reclamation.	F/S/N/I
Disaster Unemployment Assistance (DUA)	Labor, Department of (DOL), FEMA	Direct payments of DUA benefits and reemployment assistance services. Objective is to provide assistance to individuals who are ineligible for regular unemployment compensation programs and who are left jobless after a major disaster.	PD, designated for individual assistance. PD may be limited to DUA only	I, via S
Employment: Job Training Partnership Act (JTPA), National Reserve Emergency Dislocation Grants	DOL, Employment and Training Administration	Program provides states with grant money to provide individuals with temporary jobs and/or employment assistance.	PD	I, via S
Price-Anderson Act	American Nuclear Insurers and Nuclear Regulatory Commission (NRC)(for commercial nuclear power plants) Department of Energy (for DOE facilities)	Payment of liability claims that arise from a nuclear power reactor accident. Insurance-provided assistance may compensate victims for: increased living expenses after an evacuation; unemployment; business losses; environmental cleanup; reduced property values; and costs associated from bodily injury.	AWD	I

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Price-Anderson Act	NRC	Insurance reimburses states and municipalities for costs necessarily incurred in providing emergency food, shelter, transportation, or police services in evacuating the public after a nuclear power reactor incident	AWD	S/L
Economic Injury Disaster Loans (EIDL)	Small Business Administration (SBA)	Direct loans to small businesses and agricultural cooperatives. Loans are only available to applicants with no credit available elsewhere and the maximum amount of an EIDL loan is \$1,500,000	PD; declaration of a disaster by the Secretary of Agriculture and/or SBA declared disaster	B
Physical Disaster Loans (Business)	SBA	Direct loans to businesses and non-profit organizations. Loans provided to repair or replace uninsured property damages caused by disasters. Loans limited to \$1,500,000.	PD or SBA declaration	N/B
Physical Disaster Loans (Individuals)	SBA	Direct loans. Loans to homeowners and renters to repair or replace uninsured damages to real and personal property caused by disasters. Loan amounts limited to \$200,000 to repair or replace real estate, and to \$40,000 to repair or replace personal property.	PD or SBA declaration	I
Social Security Assistance	Social Security Administration (SSA)	Advisory and counseling services to: (1) process SSA survivor claims; (2) assist in obtaining necessary evidence for claim processing; (3) resolve problems involving lost or destroyed SSA checks; and (4) reprocess lost or destroyed pending claims.	PD and AWD	I

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Donations International	State, Department of	Donations including items of need and cash.	Request for international coordination assistance from FEMA's Donations Coordinator	I
Transportation: Emergency Relief Program	Transportation, Department of (DOT), Federal Highway Administration (FHWA)	Formula and project grants to repair roads. FHWA can provide: (1) up to \$100 million in funding to a State for each natural disaster or catastrophic failure; and (2) up to \$20 million in funding per year for each U.S. territory. Special legislation may increase the \$100 million per state limit.	PD, AWD	F/S
Tax Refund, Alcohol and Tobacco	Treasury, Department of the, Bureau of Alcohol, Tobacco and Firearms	Specialized services to provide federal alcohol and tobacco excise tax refunds to businesses that lost assets in a disaster.	PD	B
Savings Bonds Replacement or Redemption	Treasury, Bureau of Public Debt	Specialized services. Bureau of Public Debt expedites replacement of U.S. Savings Bonds lost or destroyed as a result of a disaster.	PD	I
Taxes: Disaster Assistance Program	Treasury, Department of the, Internal Revenue Service (IRS)	Advisory and counseling services. IRS provides information about casualty loss deductions, claim procedures, and reconstruction of lost financial records.	PD	I/B

Program	Agency	Assistance Provided	Activating Mechanism	Eligibility
Forbearance on VA Home Loans	Veteran Affairs, Department of (VA)	Encourage lenders to extend forbearance to any borrowers who have VA home loans and who are in distress due to disaster; provide incentives to such lenders.	PD	I
Coastal Zone Management; Hazards, Environmental Recovery, and Mitigation	DOC, Natural Oceanic and Atmospheric Administration (NOAA)	Assistance to state and local governments in mitigation and recovery/restoration planning; post-event permitting assistance; compilation of coastal photo-grammetry and digital multi-spectral data for precise shoreline and vegetation change; water-level data for storm surge and flooding prediction and mitigation.	PD for post-event; AWD from coastal state(s) for pre-event planning.	S
Reestablishing Local Survey Networks	DOC, NOAA	Provision of survey mark data to local and state agencies for reestablishing their geodetic control networks; reestablishment of national network if warranted.	PD; AWD depending on funding availability	S/L
Coastal Zone Management Administration Awards	DOC, NOAA	Grants to states for the management of coastal development to protect life and property from coastal hazards.	AWD requires supplemental appropriation by Congress relating to PD for post-storm coastal hazard mitigation and recovery activities.	S/L/T via S
Coastal Zone Management Fund	DOC NOAA	Emergency grants to state coastal zone management agencies to address unforeseen or disaster-related circumstances.	AWD subject to amounts provided in appropriation acts. No funds currently appropriated.	S/L/T via S
Technical Support	DOC, National Institute of Standards and Technology	Disaster damage surveys, assistance in procurement of consulting services, evaluation of structural and fire performance of buildings and lifelines.	Federally declared disasters to buildings and lifelines, on cost-reimbursable basis.	F/S/L

Appendix F

Disaster Recovery Ordinance

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Hazard Analysis Worksheet

..... Appendix G
Hazard: Flooding

Potential Magnitude (Percentage of the jurisdiction that can be affected):**Catastrophic:** More than 50%**Limited:** 10%-25%**Critical:** 25%-50%X **Negligible:** Less than 10%**Frequency of Occurrence:****Highly Likely:** Near 100% probability**Possible:** 1%-10% probability or 1 chance in next 100 yearsX **Likely:** 10%-100% probability or 1 chance in next 10 years**Unlikely:** <1% probability in next 100 years**Seasonal Pattern:** Late Spring, Summer

Areas Likely to be Affected Most: Primarily vacant agricultural land, but floods in the past have affected residences and businesses. The area of county at highest risk is along the Missouri River and the West Nishnabotna River. Localized floods can occur at other areas within the county.

Probable Duration: 1 Week**Potential Speed of Onset (Probable amount of warning time):****Minimal (or no) warning**X **12 to 24 hours warning****6 to 12 hours warning****More than 24 hours warning**

Existing Warning Systems: River levels are monitored at various places and if determined to be a threat to citizens are notified through the news media and county indoor warning system.

Complete Vulnerability Analysis: Greatest risk is a result of poor drainage of storm water. A high river level causes the water table to be high and limits the infiltration of storm water.

Sector	Essential Facilities at Risk	
	Agricultural Economy Water Plants/Wells Govt Facilities	
	Population at Risk	
	Residents and Businesses living and operating in low areas near the Missouri River, West Nishnabotna or any other river/stream Farm Animals/Pets	
	Infrastructure at Risk	
	Bridges and roads that run over rivers and streams and located in flood prone areas.	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet

Hazard: Hazardous Substance Incident

Potential Magnitude (Percentage of the jurisdiction that can be affected):

Catastrophic: More than 50%

Limited: 10%-25%

Critical: 25%-50%

X **Negligible:** Less than 10%

Frequency of Occurrence:

X **Highly Likely:** Near 100% probability in next year

Possible: 1%-10% probability or 1 chance in next 100 years

Likely: 10%-100% probability or 1 chance in next 10 years

Unlikely: <1% probability in next 100 years

Seasonal Pattern: None – Winter driving conditions do pose a potential additional risk.

Areas Likely to be Affected Most: For transportation, most likely incident will occur along I-29 or HY-34 corridor. Also possible incident may occur at a fixed site location or pipeline. An incident could affect an entire community.

Probable Duration: 6-24 hours

Potential Speed of Onset (Probable amount of warning time):

X **Minimal (or no) warning**
6 to 12 hours warning

12 to 24 hours warning
More than 24 hours warning

Existing Warning Systems: News media and county indoor warning system.

Complete Vulnerability Analysis: County is highly vulnerable to a hazardous substance incident. With the high traffic roadways and numerous fixed site handlers the possibility of an incident is high.

Sector	Essential Facilities at Risk	
	Senior Citizen Care Facilities	
	Schools	
	Govt Facilities	
	Population at Risk	
	Residents or businesses near the interstate/major highway corridors or fixed site handlers.	
	Elderly/Special Needs	
	Infrastructure at Risk	
	Explosion is the primary risk to infrastructure.	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet**Hazard:** Tornado**Potential Magnitude (Percentage of the jurisdiction that can be affected):****Catastrophic:** More than 50%**Limited:** 10%-25%**Critical:** 25%-50%X **Negligible:** Less than 10%**Frequency of Occurrence:****Highly Likely:** Near 100% probability**Possible:** 1%-10% probability or

1 chance in next 100 years

X **Likely:** 10%-100% probability or
1 chance in next 10 years**Unlikely:** <1% probability in next 100 years**Seasonal Pattern:** April - October**Areas Likely to be Affected Most:** Entire county is at risk.**Probable Duration:** Less than 1 hour**Potential Speed of Onset (Probable amount of warning time):**X **Minimal (or no) warning****12 to 24 hours warning****6 to 12 hours warning****More than 24 hours warning****Existing Warning Systems:** Community Outdoor Siren Warning System, NOAA Weather Radio, News Media, and County Indoor Warning System.**Complete Vulnerability Analysis:** County is at risk from a tornado event and warning is limited to minutes. Warning system is operational and does reduce the threat. Generally some areas of the country have a greater risk of a tornado. Since it is a fairly small area of impact and it "randomly" hits a location it is best to assume that the county can be hit at any time during tornado season. The amount of protection available to residents varies greatly.

Sector	Essential Facilities at Risk	
	Schools, Elderly/Special Needs Facilities Water Plants/Waste Water Plants/Govt Facilities Utilities (Elect/Gas)	
	Population at Risk	
	Entire County	
	Infrastructure at Risk	
	Buildings/Bridges/Agriculture Land/Utilities	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet**Hazard:** Severe Summer Storms**Potential Magnitude (Percentage of the jurisdiction that can be affected):****Catastrophic:** More than 50%**Limited:** 10%-25%**Critical:** 25%-50%X **Negligible:** Less than 10%**Frequency of Occurrence:**X **Highly Likely:** Near 100%
probability**Possible:** 1%-10% probability or
1 chance in next 100 years**Likely:** 10%-100% probability or
1 chance in next 10 years**Unlikely:** <1% probability in next 100 years**Seasonal Pattern:** April - September**Areas Likely to be Affected Most:** Entire County Area is at risk.**Probable Duration:** 1-2 hours**Potential Speed of Onset (Probable amount of warning time):****Minimal (or no) warning****12 to 24 hours warning**X **6 to 12 hours warning****More than 24 hours warning****Existing Warning Systems:** NOAA Weather Radio, News Media and County Indoor Warning System.**Complete Vulnerability Analysis:** County is at risk from a Summer Storm event, but most hazards with such events can be minimized with common sense activities.

Sector	Essential Facilities at Risk	
	Utilities (Elect)	
	Elderly/Special Needs Facilities	
	Communications Tower(s)/Facilities	
	Population at Risk	
	Entire County	
	(Particularity Elderly/Children)	
	Infrastructure at Risk	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet

Hazard: Severe Winter Storm

Potential Magnitude (Percentage of the jurisdiction that can be affected):

X **Catastrophic:** More than 50% **Limited:** 10%-25%
Critical: 25%-50% **Negligible:** Less than 10%

Frequency of Occurrence:

X **Highly Likely:** Near 100% probability **Possible:** 1%-10% probability or 1 chance in next 100 years
Likely: 10%-100% probability or 1 chance in next 10 years **Unlikely:** <1% probability in next 100 years

Seasonal Pattern: October - March

Areas Likely to be Affected Most: Entire County is at risk.

Probable Duration: 12-36 hours

Potential Speed of Onset (Probable amount of warning time):

Minimal (or no) warning X **12 to 24 hours warning**
6 to 12 hours warning **More than 24 hours warning**

Existing Warning Systems: NOAA Weather Radio System, News Media and County Indoor Warning System.

Complete Vulnerability Analysis: Since the probability of a storm hitting the county in any given year is high, residents can be surprised by the intensity of a storm. Elderly persons and children are particularly vulnerable.

Sector	Essential Facilities at Risk	
	Utilities (Electric/Communications)	
	Elderly/Special Needs facilities	
	Schools/Govt Facilities	
	Population at Risk	
	Children/Elderly/Special Needs	
	Entire County	
	Infrastructure at Risk	
	Countywide above ground utilities/services	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet

Hazard: Extreme Heat and Cold

Potential Magnitude (Percentage of the jurisdiction that can be affected):

X **Catastrophic:** More than 50% **Limited:** 10%-25%
Critical: 25%-50% **Negligible:** Less than 10%

Frequency of Occurrence:

X **Highly Likely:** Near 100% probability **Possible:** 1%-10% probability or 1 chance in next 100 years
Likely: 10%-100% probability or 1 chance in next 10 years **Unlikely:** <1% probability in next 100 years

Seasonal Pattern: Susceptible year round to these events..

Areas Likely to be Affected Most: This event is not limited to geographic areas.

Probable Duration: Range in duration from 1 day to several days or even up to a week or more.

Potential Speed of Onset (Probable amount of warning time):

Minimal (or no) warning **12 to 24 hours warning**
6 to 12 hours warning X **More than 24 hours warning**

Existing Warning Systems: NOAA Weather Radio System, News Media and Count Indoor Warning System.

Complete Vulnerability Analysis: The county is vulnerable to such an event, but the mitigation measures include proper heating and cooling equipment for residents. Agricultural animals/pets are also at risk. Most hazards with such events can be minimized with common sense activities and public education.

Sector	Essential Facilities at Risk	
	Schools/Elderly/Special Needs Housing Facilities	
	Population at Risk	
	Elderly and children	
	Infrastructure at Risk	
	None	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property
	Risk is greatest to health of residents	

Hazard Analysis Worksheet

Hazard: Earthquake

Potential Magnitude (Percentage of the jurisdiction that can be affected):

Catastrophic: More than 50%

Limited: 10%-25%

Critical: 25%-50%

X **Negligible:** Less than 10%

Frequency of Occurrence:

Highly Likely: Near 100% probability

Possible: 1%-10% probability or 1 chance in next 100 years

Likely: 10%-100% probability or 1 chance in next 10 years

X **Unlikely:** <1% probability in next 100 years

Seasonal Pattern: None

Areas Likely to be Affected Most: Entire County

Probable Duration: Less than 30 minutes, plus recovery time.

Potential Speed of Onset (Probable amount of warning time):

X **Minimal (or no) warning**
6 to 12 hours warning

12 to 24 hours warning
More than 24 hours warning

Existing Warning Systems: None (There may be some warning for heightened potential from prediction center(s)). Post event would be NOAA, News Media, County Indoor warning System

Complete Vulnerability Analysis: Risk from Earthquake is very low. No major earthquake has occurred near the county. The closest major shock was over 500 miles SE in the early 1800s. The county lies within a region of infrequent seismic activity.

Sector	Essential Facilities at Risk	
	Any facility is at risk from an earthquake.	
	Population at Risk	
	All county residents would be at risk.	
	Infrastructure at Risk	
	All infrastructures, especially bridges and roads would be at risk.	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property
	Limited risk	

Hazard Analysis Worksheet**Hazard:** Erosion/Land Slide**Potential Magnitude (Percentage of the jurisdiction that can be affected):****Catastrophic:** More than 50%**Limited:** 10%-25%**Critical:** 25%-50%X **Negligible:** Less than 10%**Frequency of Occurrence:****Highly Likely:** Near 100%
probabilityX **Possible:** 1%-10% probability or
1 chance in next 100 years**Likely:** 10%-100% probability or
1 chance in next 10 years**Unlikely:** <1% probability in next 100
years**Seasonal Pattern:** March – November, especially high water years**Areas Likely to be Affected Most:** Any area of county with a grade greater than 15% is at risk.**Probable Duration:** Cumulative effects are the concern**Potential Speed of Onset (Probable amount of warning time):**X **Minimal (or no) warning**
6 to 12 hours warning**12 to 24 hours warning**
More than 24 hours warning**Existing Warning Systems:** None**Complete Vulnerability Analysis:** In the past events in the county have been primarily limited to erosion of rural and county road sidings and bridge abutments by water. The nature of these hazards has tended to effect a small portion of residents. Also there is one rural area in county that has experienced limited scope landslide effect(s). Risk from Erosion is fairly low.

Sector	Essential Facilities at Risk	
	None	
	Population at Risk	
	Residents in immediate area	
	Infrastructure at Risk	
	Roads/Bridges	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet

Hazard: Drought

Potential Magnitude (Percentage of the jurisdiction that can be affected):

X **Catastrophic:** More than 50% **Limited:** 10%-25%
Critical: 25%-50% **Negligible:** Less than 10%

Frequency of Occurrence:

Highly Likely: Near 100% probability
X **Likely:** 10%-100% probability or 1 chance in next 10 years
Possible: 1%-10% probability or 1 chance in next 100 years
Unlikely: <1% probability in next 100 years

Seasonal Pattern: Summer factors tend to increase the impact of a drought.

Areas Likely to be Affected Most: Entire county, especially areas that have limited access to backup water sources.

Probable Duration: Potentially up to 8 or 9 months

Potential Speed of Onset (Probable amount of warning time):

Minimal (or no) warning **12 to 24 hours warning**
6 to 12 hours warning X **More than 24 hours warning**

Existing Warning Systems: News Media would typically provide information as the situation develops over a long period of time, since drought isn't a disaster that develops suddenly.

Complete Vulnerability Analysis: Risk from Drought is somewhat limited to countywide community water supplies over short term. Agricultural Economy is most impacted.

Sector	Essential Facilities at Risk	
	Water Wells Agricultural Economy	
	Population at Risk	
	Entire County Population Farm Animals/Wildlife	
	Infrastructure at Risk	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property
	Limited	

Hazard Analysis Worksheet

Hazard: Fire/Grass Fire

Potential Magnitude (Percentage of the jurisdiction that can be affected):

Catastrophic: More than 50%

Limited: 10%-25%

Critical: 25%-50%

Negligible: Less than 10%

Frequency of Occurrence:

Highly Likely: Near 100%
probability

Possible: 1%-10% probability or
1 chance in next 100 years

X **Likely:** 10%-100% probability or
1 chance in next 10 years

Unlikely: <1% probability in next 100 years

Seasonal Pattern: Grass fires are more seasonal during Summer/Fall and extended dry periods. Otherwise there isn't a seasonal pattern to fires.

Areas Likely to be Affected Most: Entire County, especially buildings in disrepair, heavy and dry grassy areas and commercial business that utilize flammable materials.

Probable Duration: 1-4 hours

Potential Speed of Onset (Probable amount of warning time):

X **Minimal (or no) warning**
6 to 12 hours warning

12 to 24 hours warning

More than 24 hours warning

Existing Warning Systems: None

Complete Vulnerability Analysis: The county has many older structures that are susceptible to fire. Many commercial businesses store flammable materials. Grass fires are also a major concern, especially during dryer periods.

Sector	Essential Facilities at Risk	
	Population at Risk	
	Infrastructure at Risk	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Sector	Essential Facilities at Risk	
	Elderly/Special Needs Care Facilities Schools/Govt Facilities/Utilities/Health Care	
	Population at Risk	
	Entire County with special emphasis on Elderly/Special Needs Population	
	Infrastructure at Risk	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Sector	Essential Facilities at Risk	
	Any facility hit by the impact of the crash. Schools/Power Supplies/Water Plants/Waste Water Plants Govt Facilities	
	Population at Risk	
	Communities Any Densely populated area within the county	
	Infrastructure at Risk	
	All infrastructure is at risk from a direct hit from an aircraft.	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Hazard Analysis Worksheet

Hazard: Levee Collapse

Potential Magnitude (Percentage of the jurisdiction that can be affected):

Catastrophic: More than 50%

Limited: 10%-25%

Critical: 25%-50%

X **Negligible:** Less than 10%

Frequency of Occurrence:

Highly Likely: Near 100% probability X **Possible:** 1%-10% probability or
1 chance in next 100 years

Likely: 10%-100% probability or **Unlikely:** <1% probability in next 100
1 chance in next 10 years years

Seasonal Pattern: Late Spring through early Fall. Spring may be the season of greatest risk because of flooding, but other risk is apparent in other seasons based on other causes of an event, such as terrorism, vandalism, lack of maintenance or poor construction.

Areas Likely to be Affected Most: Low lying areas near waterways, such as the Missouri River.

Probable Duration: 1 day to 1 week depending on location of event.

Potential Speed of Onset (Probable amount of warning time):

Minimal (or no) warning **12 to 24 hours warning**
X **6 to 12 hours warning** **More than 24 hours warning**

Existing Warning Systems: Govt Agencies, News Media, NOAA EAS, County Indoor Warning System.

Complete Vulnerability Analysis: The levee along the Missouri River does pose a risk, but most of the land within the county in this area does not contain residential structures. Levees in and around Pacific Junction if breached would pose immediate threat to populated areas in and around city.

Sector	Essential Facilities at Risk	
	Agricultural Economy/Govt. Facilities	
	Population at Risk	
	Residents in agricultural areas and densely populated areas near levee(s).	
	Infrastructure at Risk	
	Bridges/Roads	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Sector	Essential Facilities at Risk	
	Utility Sub-stations/Water Systems/Govt. Facilities Schools/EHS Sites	
	Population at Risk	
	All residents – Areas where large numbers of persons are located in a confined area.	
	Infrastructure at Risk	
	Property at Risk	
	Expected Extent of Damage	Percent of Sector Property

Appendix H

Recovery Function Assignments

