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Disaster and Emergency Response

Government, communities and families all have a part to play in responding to emergencies. Being prepared may prevent an emergency from becoming a disaster.

13.1 Introduction

This section discusses flood hazard mitigation and drought response. It also briefly discusses programs presently in place and additional programs that could be beneficial in dealing with flooding and drought problems. The Division of Comprehensive Emergency Management (SEM.) is the designated state coordinating agency for disaster and emergency response. Many emergencies are water-related, varying from disastrous flooding to extreme drought. Most disasters are naturally caused. A few, such as chemical or oil spills, are man-caused. Some situations, such as a dam failure, can have a complex combination of natural and man-made causes. When a state emergency arises, a response plan, maintained by SEM., provides quick and effective coordination of state resources. The state also maintains a State Hazard Mitigation Team (SHMT) to provide hazard mitigation planning assistance to local jurisdictions and counties. The SHMT may focus on either pre-hazard mitigation planning or post-hazard mitigation planning. Both planning efforts focus on measures that may lessen or eliminate the impact of future disasters. The following paragraphs define the organizational responsibilities for emergency response in the Utah Lake Basin, concentrating mainly on the two most common water-related emergencies: floods and drought.

13.2 Background

Federal, state and local governments have statutory authority to plan for, and respond to, disasters. No one entity has enough authority to make and carry out all decisions necessary to mitigate a specific hazard or respond to a disaster. The *Utah State Water Plan* (1990) presents the specific authorities and programs vested in the various agencies. See Sections 13 and 16.

13.3 Organizations and Regulations

Local, state and federal agencies are encouraged to work together in preparing for and mitigating damages from disaster events. Each level of government can contribute ideas and resources from their unique perspective.

13.3.1 Local

Local agencies are responsible for initial responses to emergencies. The National Flood Insurance Program (NIP) makes flood insurance available as a protection against monetary losses when flooding occurs. The Federal Emergency Management Agency (FEMA) administers the NIP. More detail is given in 13.6.1.

Local governments are required to carry out the following tasks to provide an effective first response to emergencies:

- Prepare an emergency operations plan for the coordination of local and county emergency responses, and link it to potential assistance from appropriate federal and state agencies.
- Provide necessary resources (including special supplies and equipment) to support emergency relief operations and list these resources. Procedures to be followed for obtaining assistance and use of resources in the emergency operation plans should be included.
- Assign and train personnel needed to do disaster relief functions.
- Provide the State Disaster Coordinating Officer with copies of current emergency operations plans.
- Recommend changes to state and local emergency disaster relief procedures and assigned functions as needed.

Cities and counties have primary responsibility for disaster response. This is particularly pointed out in Titles 10 and 17 of the *Utah Code Annotated, 1953, Amended*. Most entities have delegated disaster responsibilities to specific individuals in their respective organizations. The agency responsible for disaster response in Utah County is the Division of Emergency Management. In Wasatch County, it is Wasatch County Emergency Services. In Juab County, Juab County Civil Defense has this responsibility. Summit County Emergency Services is the designated agency for disaster responses there.

13.3.2 State

In the event property damage and personal injuries exceed the capability of local agencies, the governor may declare a "state of emergency." A state of emergency provides state assistance and allows the state to request federal assistance. Each department and division of state government is prepared with plans that are consistent with their missions and responsibilities.

When a state of emergency is declared, the Governor's State Disaster Coordinating Officer (SDCO) assumes responsibility for distributing state and federal assistance to local disaster victims. The SDCO works with local coordinators to distribute aid in an efficient and effective way. The SDCO also serves as the governor's primary point of contact for all disaster-related correspondence between federal, state and local disaster management officials.

One responsibility of the Division of Comprehensive Emergency Management (SEM.) is to generate an interest in developing emergency response and management plans. With their help, towns, cities and counties are to prepare their own comprehensive emergency response and management plans. These plans should allow for close cooperation with state and federal agencies in case a major disaster goes beyond local capabilities. The SEM. also works closely with other state and federal agencies to assure needed resources reach areas seriously affected by a major disaster.

13.3.3 Federal

Federal assistance in a local disaster begins with a request from the governor. If the President of the United States declares the event a "federal emergency" or major disaster, the state is eligible for federal assistance. Many assistance programs are available through FEM.. A federal emergency is limited to funding required to save lives, protect property and restore essential public services. A "major disaster" declaration allows funding to restore public and private property and to change natural or man-made conditions that may contribute to future damage or additional disasters. Aid from federal disaster programs must be distributed under direction of the Federal Coordinating Officer, designated by FEM. and the State Disaster Coordinating Officer, designated by the governor.

The Corps of Engineers frequently becomes involved in flooding problems at the request of the SEM., to provide technical assistance, advance measures, flood fight assistance and post-flood mitigation recommendations. Other emergency assistance is provided in times of drought, earthquakes or other natural disasters.

Thistle slide in June 1983

13.4 Flooding Problems

Three types of flooding are common: spring snowmelt, summer thunderstorms and general rainstorms. Occasionally, a combination of snowmelt and rain will create flooding, as will rain on frozen ground. Snowmelt flooding occurs over large areas and may be sustained over long periods. These floods usually occur from April through June and affect most streams in the basin. Runoff produced by thunderstorms is much less, but peak flows may be higher.

Damages from the major snowmelt flood in 1983 totaled about $369 million in the Utah Lake drainage. The Thistle landslide and flood cost more than $200 million due to extensive damage to railroads and highways. Indirect costs have also been high. Revenue losses to the railroad and mining companies were a significant part of the damage. Approximately $4.7 million in damages were sustained around Utah Lake. Flooding on Salt Creek created damages of $2.4 million in the Nephi area.

Flood Insurance Rate Maps in Figures 13-1, 13-2 and 13-3 are shown for the American Fork, Provo and Spanish Fork rivers. These maps are provided by the Federal Emergency Management Agency. Table 13-1 shows historical damages from flooding on major basin streams.

13.5 Other Water-Related Emergency Problems

Water-related emergencies may arise from different types of events. Included are droughts, earthquakes, land slides and structural failure of water storage facilities.

13.5.1 Drought

The Utah Lake Basin has experienced extended droughts in the 1930s, 50s, 70s and 90s that threatened water supplies to all users. Effects of these drought events have been reduced by significant water storage that is available in Deer Creek, Mona, and Strawberry reservoirs. Jordanelle Reservoir provides additional carry-over storage to further reduce the impact of droughts.

13.5.2 Earthquakes

One of the most threatening natural disasters that may occur in this basin would be a major earthquake. Not only would this create substantial losses of lifeline and transportation services but could damage the structural integrity of major dams. Jordanelle Dam was designed and constructed according to modern standards. Two major faults are on the west side of Deer Creek Reservoir. There is no evidence of movement on either of these faults. The Wasatch Fault extends the full length of the basin from Nephi to Alpine and is the major seismic threat. Earthquake insurance is available.

The Bureau of Reclamation is currently re-evaluating all federally-constructed dams to assess structural integrity against various levels of seismic intensity. The bureau has completed extensive tests at Deer Creek and Mona reservoirs. Both structures are considered safe.

13.5.3 Landslides

The Thistle landslide is the most recent and largest of the major slides in Utah and the most expensive slide in U.S. history. It cost more than $69 million in direct costs to repair the severed highway, railroad and Spanish Fork River. Since it covered the river, it was also necessary to stabilize, bypass, then breach, the resulting dam. The extremely wet weather in 1982-1984 and specific geological factors caused the Thistle landslide.

13.5.4 Toxic Spills

The potential exists for spills of toxic substances into the Provo and Jordan Rivers and the Provo Reservoir Canal. Since those are present and potential sources of municipal water, extensive damage is possible.

13.6 Flood Damage Prevention Alternatives

Preparation through planning and ongoing activities help to minimize future damages. Government agencies, private organizations and families all have an important role in flood damage prevention.

13.6.1 Flood Plain Zoning and Insurance

Congress established the National Flood Insurance Program (NIP) with the passage of the National Flood Insurance Act of 1968. The NIP is a federal program enabling property owners to purchase insurance protection against losses from flooding and discourage unwise development in the floodplain. Insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

Participation in the NIP is voluntary and based on an agreement between local communities and the federal

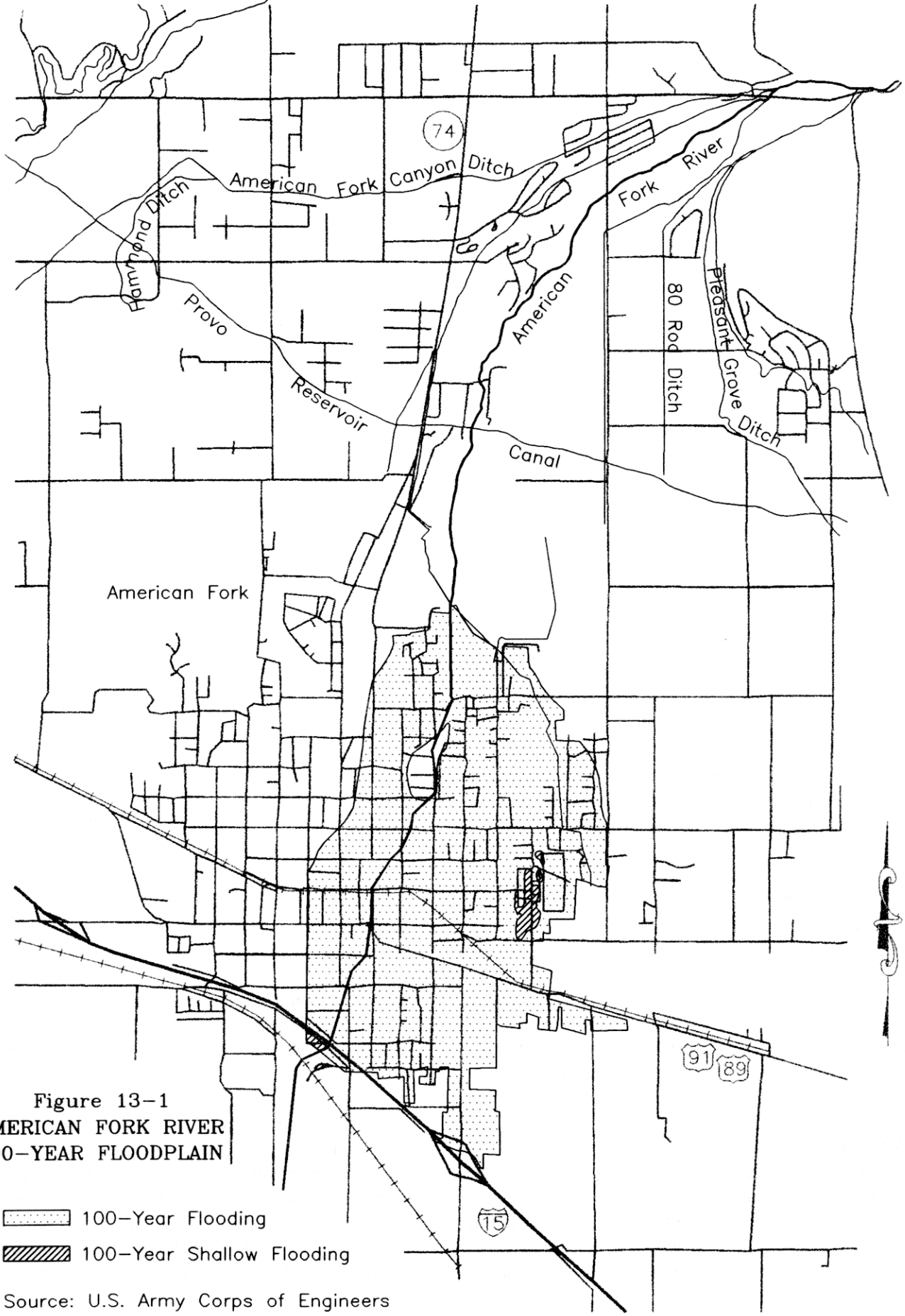

Figure 13-1
AMERICAN FORK RIVER
100-YEAR FLOODPLAIN

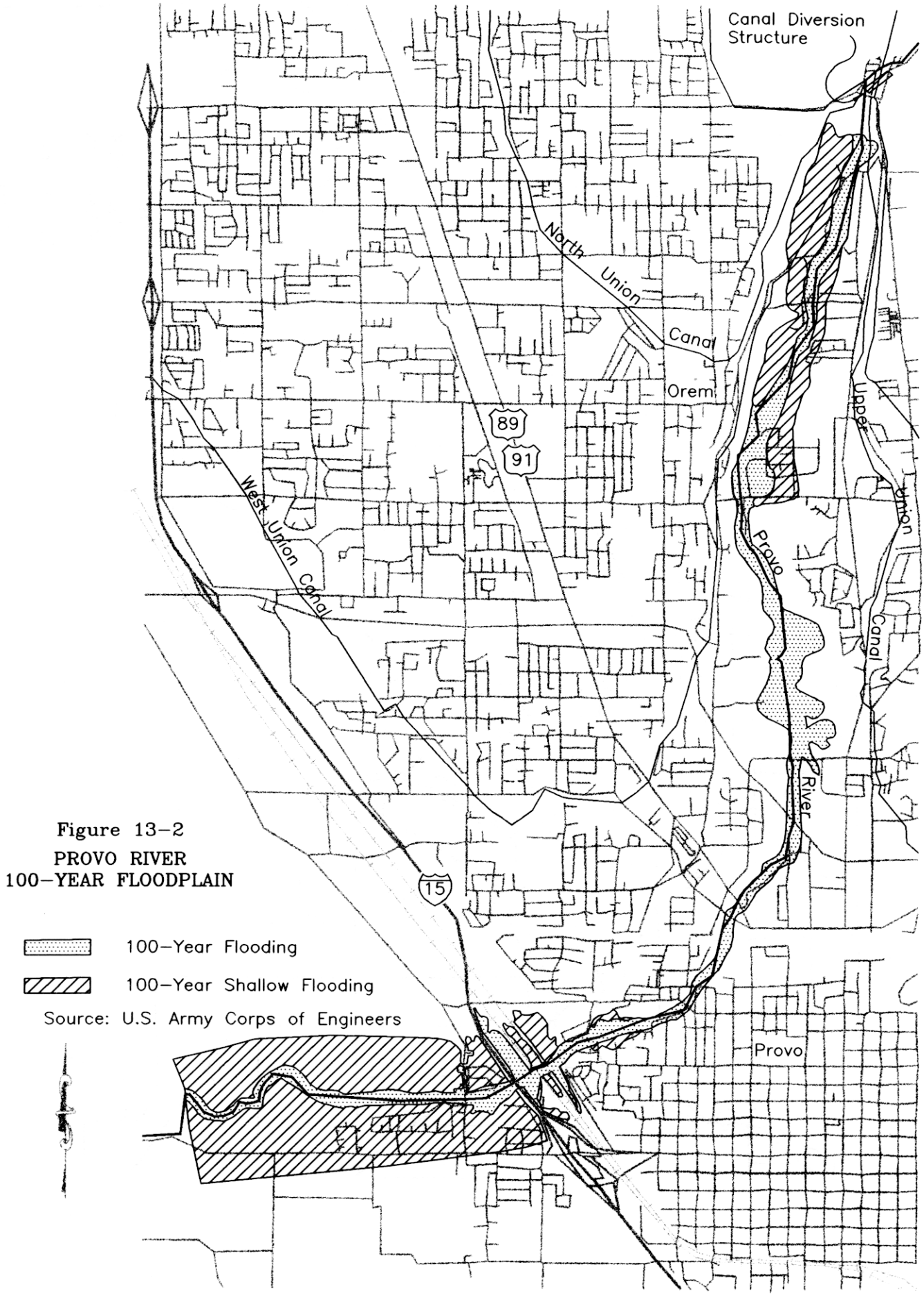

Figure 13-2
PROVO RIVER
100-YEAR FLOODPLAIN

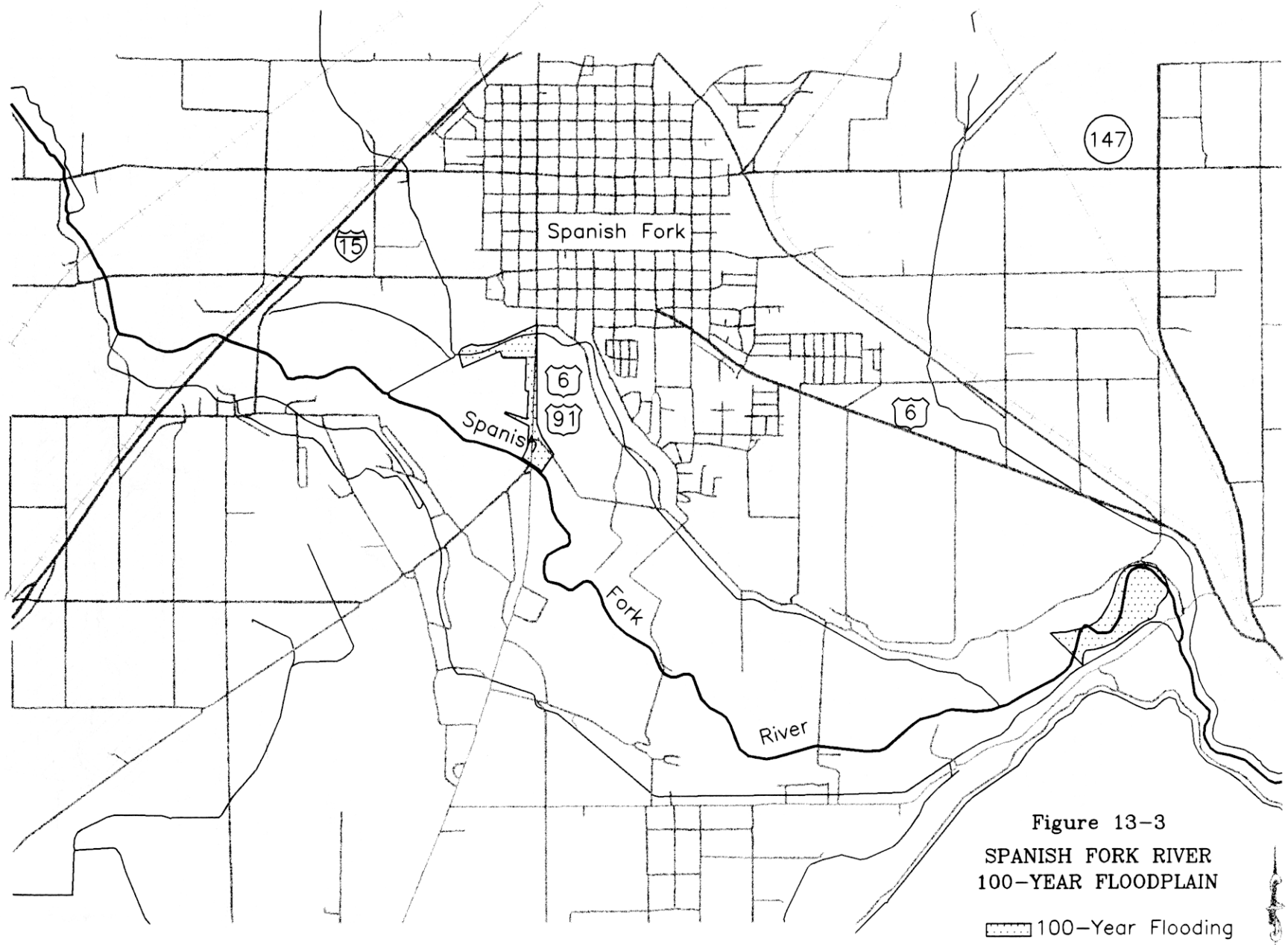

Figure 13-3
SPANISH FORK RIVER
100-YEAR FLOODPLAIN

Source: U.S. Army Corps of Engineers

Table 13-1 FLOOD DAMAGES IN 1983-84 FLOODS		
Stream	Location	Damages ($)
Salt Creek	Nephi	2,400,000
Summit Creek	Santaquin	No damage estimate
Peteetneet Creek	Payson	800,000
Spanish Fork River	Spanish Fork	337,000,000[a]
Hobble Creek	Springville	824,000
Provo River	Provo	1,309,000
Slate & Rock Canyons	Provo	No damage estimate
Battle & Grove Creeks	Pleasant Grove	No damage estimate
American Fork River	American Fork	No damage estimate
Dry Creek	Lehi	392,000

[a]Includes Thistle landslide $69 million direct, and $268 million revenue loss to railroad and utilities.

government which states that if a community will implement and enforce measures to reduce future flood risk to new construction in special flood hazard areas, the federal government will make flood insurance available within the community as a financial protection against flood losses which occur.

Flood insurance will not be available in communities having designated special flood hazard areas that choose not to participate or have been sanctioned by FEM.. No disaster assistance will be available for repair or replacement of real or personal property in special flood hazard areas within non-participating or sanctioned communities. Sanctioned communities are communities that have an identified special flood hazard area and have either failed to adopt or failed to enforce the required floodplain management ordinances. Individuals living in such communities should express their concerns to public officials regarding participation in the NIP. Communities currently participating in the NIP in the basin are shown in Table 13-2.

Utah County, the portion of Wasatch County within the boundaries of the Utah Lake Basin, and Nephi in Juab County participate in the NIP. Fifteen separate participating communities are found within the area of Utah County. Utah County government and these communities have approximately 89 policies in force and a total dollar coverage of approximately $7,183,000. A community agrees to enact and enforce minimum floodplain management requirements as stated in the Code of Federal Regulations (44 CFR), Part 60.3. In exchange for enforcing these regulations, flood insurance is made available within the participating community. These regulations apply to new construction and substantial improvements.

The Division of Comprehensive Emergency Management is the state coordinating agency for the NIP. This office can help local participating communities in the achievement of floodplain management objectives defined by the NIP. Also, the Corps of Engineers, through its Floodplain Management Services Program, can develop or upgrade floodplain boundary maps at no cost for communities in need. Requests are made through the state floodplain administrator. Local jurisdictions and counties have adopted zoning and flood hazard regulations to reduce flood damage effects of future construction.

13.6.2 Watershed Protection

Three watershed projects are being considered. See Section 10 (Subsection 10.5.3) for more information.

13.6.3 Flood Control Structures

Prevention of flood damage depends more on families, cities and counties being prepared than on the weather. Local ordinances governing subdivision development and transportation planning should provide for safe disposal of all surface flows. Managing the stream channel where surface flows accumulate is also important. Table 13-3 shows actions that should be considered by local and state agencies to prevent flood damages along major basin streams.

13.7 Drought Damage Reduction Alternatives

Drought damages can be reduced by precipitation augmentation, water conservation, increasing carryover storage in reservoirs during non-drought years and drought planning.

Drought planning is a useful process to help those responsible for providing water supplies think ahead to the next drought and prepare long-range plans. Utah's drought response plan is available to provide guidance.

Of immediate concern to water managers who engage in drought planning are tourism, wildlife, agricultural enterprises and cities. Hydroelectric power generation and water quality can also be adversely affected. As cities grow and tourism activities expand, wildlife and agriculture become more vulnerable. Drought plans can establish priorities of water use.

Local governments and water right owners should work out understandings and agreements so water is more readily available when droughts occur. These can provide for water sharing so that the most valued activities continue and those who give up water temporarily are compensated. Several examples of water sharing are available in other states. In a typical case, farmers agree not to irrigate a specific acreage during future drought periods so that more water can be diverted to a municipality for its use. Each county in the basin should prepare and occasionally update a drought response plan.

13.8 Other Emergency Alternatives

Actions that ensure basic security in the face of nearly all disasters include:

- Disaster response plans by individual communities and counties.
- Investigation and construction of water storage and flood damage prevention projects.
- Continuation of cloud seeding
- Family emergency response plans and 72-hour kits.

The Division of Comprehensive Emergency Management suggests all residents prepare a 72-hour emergency survival kit. According to experts in the field, this will allow adequate time for relief efforts to reach most residents. Along with preparing this kit, families should develop their own emergency plan outlining each member's responsibility during a disaster. Emergency preparedness drills are a good way to familiarize family members with their duties and help ensure their safety. Knowing when and how to turn off natural gas, water and electric power utilities can reduce damage and save lives. Utility companies and water providers should provide guidelines.

Flood damage may be reduced by structural and/or non-structural methods. Establishment of a storm drainage utility is an example. Plans should provide adequate floodplain management objectives to reduce flood loses. Hazard mitigation plans can be carried out by communities to deal with specific identified potential disasters such as flooding and alluvial fan development.

13.9 Issues and Recommendations

Three policy issues are discussed. They are: flood plain management, hazard mitigation planning and disaster response plans.

13.9.1 Flood Plain Management

Issue - Not all local governments have plans for managing flood plains to prevent flood damages, and some plans need to be updated.

Discussion - Record precipitation in late 1982 and 1983 created mammoth flooding in this basin. Utah Lake peaked at 4.93 feet above compromise in 1986. Though costly and disruptive, this flooding exposed the vulnerabilities in local flood protection planning. Since then, Jordanelle Reservoir has been constructed and stretches of the Jordan, Spanish Fork and Provo rivers have been dredged. Storm drainage systems have been expanded, and awareness of flooding potential has been heightened. Flood damage prevention studies have been prepared for proposed improvements to decide feasibility and effectiveness. Where undeveloped floodplains exist, periodic flooding of wetlands and riparian areas can serve to perpetuate critical habitat for a variety of wildlife species.

Recommendation - Participating NIP communities should actively review their local flood damage prevention ordinance to ensure they are meeting the

Table 13-2 NATIONAL FLOOD INSURANCE PROGRAM PARTICIPANTS			
Community Name	County	Date of Entry	Date of Current Map
Alpine	Utah	2/11/76	4/4/83
American Fork	Utah	11/25/80	11/25/80
Cedar Fort	Utah	1/30/84	NSFHA
Charleston	Wasatch	8/5/80	8/5/80
Genola	Utah	1/30/84	NSFHA
Heber City	Wasatch	3/18/87	3/18/87
Lehi	Utah	9/14/79	3/1/83
Lindon	Utah	2/19/86	2/19/86
Mapleton	Utah	12/16/80	12/16/80
Midway	Wasatch	8/19/80	8/19/80
Nephi	Juab	8/5/86	8/5/86
Orem	Utah	9/24/84	9/24/84
Payson	Utah	11/15/78	1/6/81
Pleasant Grove	Utah	11/30/83	11/30/83
Provo	Utah	2/1/79	9/30/88
Salem	Utah	7/6/79	7/6/79
Santaquin	Utah	12/11/85	NSFHA
Spanish Fork	Utah	2/19/86	1/19/86
Springville	Utah	9/29/78	2/15/85
Utah County	Utah	10/15/82	12/15/94
Wasatch County	Wasatch	10/1/86	10/1/86
NSFHA means no significant flood hazard area			

minimum requirements for participation in the National Flood Insurance Program. The Division of Comprehensive Emergency Management can assist communities in the implementation of the NIP regulations for development in the 100-year floodplain.

13.9.2 Hazard Mitigation Plans

Issue - Not all communities have hazard mitigation plans.

Discussion - Community leaders are encouraged to develop mitigation strategies to eliminate or lessen impacts of a disaster. In the hazard mitigation planning process, agencies set priorities for these strategies and estimate costs and time frames to address proposed mitigation. Hazard mitigation may include structural and non-structural activities as they relate to flood protection. Communities can carry out hazard mitigation plans to deal with all other identified hazards in the region such as earthquakes and hazardous material spills. The Division of Comprehensive Emergency Management is responsible for disaster and emergency response at the state level. They prepare, carry out and maintain state mitigation programs.

Recommendation - Local governments should prepare hazard mitigation plans with assistance from the Division of Comprehensive Emergency Management.

Table 13-3 FLOOD DAMAGE PREVENTION ALTERNATIVES		
Stream	Location	Action
Salt Creek	Nephi	Additional debris basins and channel clearing
Summit Creek	Santaquin	Flood channel
Peteetneet Creek	Payson	Repair & enlarge existing facilities
Spanish Fork River	Spanish Fork	Intermittent channel improvements
Hobble Creek	Springville	Channel improvements & debris basins
Provo River	Provo	Channel improvements & flood storage
Slate & Rock Canyons	Provo	Improve existing system
Grove & Battle Creeks	Pleasant Grove	Outlet for present system
American Fork River	American Fork	Channel improvements
Dry Creek	Lehi	Enlarge Dry Creek and waste ditch, debris basin, channel improvements

13.9.3 Disaster Response Plans

Issue - All communities do not have a disaster response plan.

Discussion - Local governments need to increase their ability to respond to natural disasters and emergencies. Emergency Operations Plans (EOP), also called Disaster Response Plans, address disaster response and recovery activities following a disaster. These plans should be prepared ahead of time allowing counties, cities and towns to coordinate efforts and define responsibilities. Elected officials and agency managers should decide leadership positions and timing of response activities. Utah County has an Emergency Operation Plan (EOP) in place. This plan identifies hazards in the county. It also can address disruption, contamination or exceptional shortfall in water supplies that can occur during emergencies and may result in a temporary limitation of available water. When this happens, water managers should set priorities on deliveries to meet critical needs first. Emergency Actions Plans (EAPs) have also been developed, or are being developed, for all dams in the state. The Division of Comprehensive Emergency Management reviews the private dam EAPs to ensure an adequate call down list is incorporated in the plan. This review is done in cooperation with the State Engineer's Dam Safety Section.

The Division of Comprehensive Emergency Management has the statewide responsibility of planning for, responding to, recovering from and mitigating emergencies. They have developed statewide plans for disaster response. This agency can help local entities prepare response plans for emergencies.

Recommendation - Local communities should develop emergency operation plans with the assistance of the Division of Comprehensive Emergency Management. ✣ ✣