Ann Patton is a charter member of the team that built Tulsa’s flood-control and hazard-mitigation programs. She was also the founding director of three award-winning local programs: Tulsa Partners, Project Impact, and Citizen Corps, all working through partnerships to create safe, sustainable families and communities. She heads Ann Patton Company LLC, a professional consulting firm. She serves as consultant and/or volunteer with groups such as the Institute for Business & Home Safety, Save the Children, and Tulsa Partners. She has worked with the Department of Homeland Security, the Federal Emergency Management Agency, U.S. Corporation for National and Community Service, the Surgeon General’s Office for Medical Reserve Corps, and the U.S. Army Corps of Engineers. She is secretary for the Board of Direction of the national Multihazard Mitigation Council. She has served on the Millennium Center Executive Committee, Disaster-Resistant Business Council, the National Working Group on Citizen Engagement in Health Emergency Planning, the Hazard Mitigation Working Group of the Department of Homeland Security, and the Association of State Floodplain Managers’ committee on building public support for local floodplain managers.
Introduction
Stepping gingerly over muck-slicked floors, upturned appliances, soggy sofas, and sodden carpets, survivors in the Meadowbrook neighborhood gathered in Carol Williams's flooded living room. It was June 8, 1974. The latest in a series of Tulsa floods had just flashed down Mingo Creek, directly through their neighborhood — again. People had lost count of how many times the neighborhood flooded since it was built in the 1950s.

The water was down now, but it was dark and dangerous in Carol's living room, a haven for snakes and spiders, floors too slimy to walk, and nobody was sure about the wiring. The air was heavy with the stench of foul water. Carol recalled a woman running through the streets in the night, illuminated by lightning flashes, screaming, “My baby, my baby!” Carl Moose spoke quietly about wrenching his boat from the garage just in time to run his latest flood rescue, now becoming almost routine. Bob Miller said his family spent his daughter’s ninth birthday stranded on their rooftop, watching their cat drown, with water lapping to their eaves — again.

Everybody agreed on one thing: We have to do something.

The '74 flood was neither the first nor the last on Mingo Creek. But the group that formed that day began a fight that would, in time, change the way Tulsa does business and would influence, to some degree, the nation’s disaster programs, too.

This chapter describes some of what happened in Tulsa and what we learned about ways to build a community that is safe, secure, and sustainable. This chapter includes a bit about the place and characters; about death and disaster, about some of the programs and policies that helped move us forward.

Because this account must be abbreviated, it cannot properly acknowledge the many, many people who dedicated their time and talents to help improve our town. The Tulsa story must begin and end with thanks to these many partners, in our hometown but also from afar, who helped us learn from disaster and turn it into community progress.

Tulsa's Story
Some say a fair amount of human advancement arises in response to tragedy. So it has been in Tulsa.

This section describes how we made our way along, by trial and error, disaster by disaster, to reduce the risks that have plagued our lives since man moved to this locale. It focuses on the years of significant change
since the June 8, 1974, flood. Those years could be divided into a series of “eras,” and this writing follows that pattern:

1974–1984 — Conflict and confrontation
1984–1990 — Challenge and change
1990–1998 — Integration
1998–2002 — Collaboration and expansion
2002–2008 — Sustainability

A Crossroads Place

Tulsa was born in northeastern Indian Territory, now Oklahoma, after the Trail of Tears, when Lockapoka Creeks camped on a high bank of the Arkansas River. We call their site Council Oak, after a venerable nearby tree.

This is a crossroads place. The town was built on rolling terrain, where the low, timbered Ozark hills meet the plains; at a weather junction where hot, dry air from the west collides with hot, humid southern air and cool northern fronts. We call this convergence zone “Tornado Alley.” It is prone to violent storms that can spawn tornadoes and flash floods that barrel down the many creeks that flow into the Arkansas River.

Its early tents, shacks, and dusty streets were peopled by pioneers, wildcatters, and Sooners, folk who made their own rules and lived by a frontier ethic: a man has a right to do what he wants with his land. In 1905, oil was discovered at Tulsa’s doorstep, bringing a gush of wealth. The town boomed. Oil barons built a flourishing city with tree-lined boulevards and marble mansions. They established a tradition of fierce civic pride and generous donations to better their community. To this day, all current evidence to the contrary, Tulsans believe they live in the Oil Capital of the World.

The Arkansas River flooded pretty much every year, through the roarin’ twenties and into the Depression, with a possible exception of the dust bowl years. Major disasters produced changes. After the 1908 flood, Tulsa changed its form of government to the Galveston-disaster model, the City Commission government. After the 1923 flood, Tulsans produced a landmark drinking-water system and preserved a 2,800-acre open-space park in the Bird Creek bottoms. During World War II, after the 1943 flood, the U.S. Army Corps of Engineers built Arkansas River levees around Tulsa’s precious oil refineries. Floods in 1957 and 1959 produced the push that resulted in the Corps’ Keystone Dam on the Arkansas River.

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upstream from Tulsa. The Keystone Dam was closed in 1964 — producing community euphoria. Tulsans believed they would never flood again, a fantasy that lasted for many years.

By and large, nature’s extremes were viewed as something to endure. The Weather Service logged a tornado touchdown somewhere in Tulsa County, on the average, every year during the 20th century; but Tulsans firmly believed an old Indian legend that no tornado would touch down in the city; something about hills to the west. The place also produced killing summer heat and winter cold, floods, and droughts; trouble was a way of life in Oklahoma.

Meanwhile, Tulsa was growing. Many early settlers had favored the high ground, perhaps because they were in close touch with nature or perhaps influenced by Native Americans who tended to honor natural mores. Now homes and businesses spilled over the highlands and down into the bottoms of tributary creeks with names such as Mingo, Joe, Fred, Dirty Butter, Bird, and Hakey — names that would become infamous, in time, as flood followed flood, over and over again: 1957, 1959, 1963, 1968, 1970, and more.

1974–84 — Conflict and Confrontation

By 1974, when Carol Williams convened that neighborhood meeting in her flooded living room, Tulsans had become numb to flooding. Mike McCool, now Tulsa’s emergency manager but then a cop, cannot count the times he ripped off his gun belt and dived into a flood to rescue some hapless citizen. “It was just the way life was in Tulsa,” he says.

After the Mother’s Day flood in 1970, Tulsa joined the federal flood insurance program and promised to regulate floodplain land use — but the city neglected to adopt maps that would have made the regulations work. Flash floods came in rapid succession in 1971 and 1973, followed by four in 1974, dubbed “the year of the flood.” The June 8 storm was the shocker: flash flooding and three tornadoes racked Tulsa, shredding the myth of invulnerability and leaving $18 million in damages. I was a newspaper reporter then, trying to make sense of it all, and I could not imagine a worse disaster.

Carol’s group named itself Tulsans for a Better Community and began tireless agitation for flood control. They drew in supporters from across the city, including courageous maverick technical experts, such as fiery activist Ron Flanagan, a visionary planning consultant who dedicated his life to stopping Tulsa floods. They succeeded in creating a remarkable
pool of expertise on the subject, luring in leading technical experts not only from Tulsa but also from across the country.

Locally, they perceived their enemy to be the Home Builders Association. Enmity reigned. It was the decade called Tulsa’s Great Drainage War, as protesters played a clenched-teeth game with development interests. Generally, two steps forward toward stronger flood management were countered by a step or two backward when the next election favored pro-development interests, who dubbed the activists as “no growth freaks.”

Tulsans for a Better Community matured into a skilled advocacy group, in part because members did their homework, tried to speak with facts, and knew when to attack and when to thank.

Their advocacy program evolved into four major points:

- Stop new buildings that will flood or make anybody else flood worse.
- Clear the most dangerous of the flood-prone buildings and turn the land into parks.
- Carefully install remedial works, such as channels and detention ponds to hold and convey water, considering the offsite and future impacts of the works, watershed-wide.
- Involve citizens at every point.

Carol Williams epitomized the intense, diverse, and colorful group. Carol’s specialty was using surprise, unorthodox techniques. She would identify a favorite dessert of a mayor or a department head and shamelessly curry favor by bringing it on her lobbying visits. It would not be a long stretch to say that she garnered a $150 million Corps’ flood project on Mingo Creek with her fabled raisin pies for the congressman’s aide. Carol could size up people quickly, usually by analyzing their shoes, and adjust her technique for the audience. She left one nonproductive meeting in disgust, saying, “What could you expect from an entire room of black wingtips?” When an embattled commissioner questioned why group members, mostly young mothers, brought their children to the endless string of flood meetings, Carol retorted: “We’re training them to keep after you when we die.”

The Memorial Day flood of 1976 struck in the middle of the night, a three-hour, 10-inch deluge centered over the headwaters of Mingo, Joe, and Haikey creeks. The flood killed three and left some $40 million in damages to 3,000 buildings. Enraged flood victims stormed City Hall, and newly elected commissioners, sympathetic, responded with a wave
of actions. They imposed a temporary moratorium on floodplain building, hired the city’s first hydrologist, Charles Hardt, assigned planner Stan Williams to develop a set of comprehensive policies, began master drainage planning, and gained public approval for the first flood control bond issue in many years. (Since 1977, Tulsa voters have not turned down a bond issue or sales-tax initiative for flood control, according to Tulsa Budget Director Pat Connelly.)

Within a couple of years, regulation was softened after a pro-development commission came into office, but the main body of the new program held. Although the battles were far from over, in large part Tulsa appeared to have stopped creating new problems. Over at least the next three decades, Tulsans could say proudly that there was no record of flooding in any new building that was constructed in accord with the 1977 regulations.

1984–1990 — Challenge and Change
The 1984 election was another upset. Three of the five city commissioners were sympathetic to flood victims. In fact, the new mayor, Terry Young, had campaigned on a pledge to work on flood issues; and the new Street Commissioner (directly responsible for flood programs), J. D. Metcalfe, was a patrician industrialist who was a member of Tulsans for a Better Community. (I came into City Hall as J. D.’s aide, by the way.)

They had been in office 19 days when the worst flood hit on Memorial Day 1984, killing 14 and leaving $183 million in damages to 7,000 homes and businesses. We huddled in the Emergency Operations Center, shell-shocked by reports of Tulsans drowning on lands that had flooded over and over before. Young and Metcalfe vowed right then that things would never be the same — whatever the political cost.

Within hours, we had mobilized a flood-hazard mitigation team. We proceeded with a great sense of urgency. We had learned over the years, disaster by disaster, what we needed to do to seize this moment and execute bold plans. Within days, we had assessed the damage, identified the areas of highest hazard, slapped on a rebuilding moratorium, and identified repeated flooded properties that were candidates for acquisition. One goal was to stop the flooding by clearing the most vulnerable buildings and moving their owners to dry sites. Within 15 days, when FEMA came to town, we were able to meet them at the door with our plans in hand and ask for help to fund them.

It was a fight. FEMA didn’t want to fund a buyout, then considered a radical, harebrained scheme. Political opponents charged that the buyout
was a "bailout" of people who should have known better than to live in a floodplain. We countered that many of the buildings we identified for buyouts were no longer viable; some had flooded to the ceiling five times in six years, and most would continue to be flood-prone even when all planned structural projects were completed someday in the distant future.

Ultimately, we were able to gain approval to purchase 300 single-family homes and 228 mobile home pads. Mayor Young won over FEMA, and the $17.6 budget included $1.8 in federal and $11.5 million in local funds, plus the proceeds of insurance claims for homes we purchased.

Within a year, we had established a Stormwater Management Department to centralize all flood functions, headed by planner/attorney Stan Williams, which was creating a unified local program to manage flood issues. Within two years, we had instituted a storm-water utility fee, a $2 monthly charge on everybody's water bill, for stable funding of maintenance, management, and planning. We conducted aggressive maintenance and public education programs. We held hundreds of public meetings to get citizens involved in master drainage plans for the entire city. Spurred by planners Sandra Downie and Ron Flanagan, we began including recreation facilities, including trails and soccer fields, in flood-control channels and detention ponds, bringing in a new and positive constituency for storm-water management.

Mayor Terry Young lost the spring 1986 election, but Commissioner J. D. Metcalfe was reelected, and the program continued to evolve.

Another flood hit in October 1986, this time on the Arkansas River. The remnants of a hurricane dropped a 24-inch rain upstream of Keystone Dam, forcing the Corps to release upwards of 305,000 cubic feet per second downstream. It was a challenging time. Every major stream in northeast Oklahoma was at flood, including the Arkansas at Tulsa — despite Tulsans’ fond belief that the Arkansas would never flood again.

At Tulsa, a private levee broke, flooding 64 buildings. Within days, Tulsa dispatched its hazard-mitigation team and cleared 13 destroyed dwellings, helping their owners move to dry sites.

Overall, the management team worked well, minimizing damages and dangers as much as possible. The new system had passed its first big test.

1990–98 — Integration
In the 1990s, Tulsans began to pull together, united in the vision of a flood-free city. Strong leaders successfully campaigned to change Tulsa's city government from the commission to mayor-council form. The change in 1990 meant that leaders such as Commissioner J. D. Metcalfe, who had
championed the change, left City Hall. Action shifted into a new Public Works Department, headed by hydrologist Charles Hardt; and storm-water management slowly became institutionalized into city operations under Hardt’s strong leadership. One of Hardt’s skills is building bridges among warring groups, and he helped bring adversaries together to jointly build a safer city. Some former adversaries became strong advocates for floodplain management and, eventually, it became a generally accepted element of the city’s services.
In 1987, researcher Claire Rubin had reported that Tulsa County had the most (to that time) federally declared flood disasters of any other community — nine in 15 years. Then, in 1992, FEMA ranked Tulsa’s flood program tops in the nation in its new Community Rating System program. Tulsans generally understood that this community, which had one of the worst flooding problems in the nation, was becoming a national model, and they were proud.

Interest in floodplain management peaked again in 1993 when the Mississippi River flooded. With FEMA’s new interest in mitigation, floodplain clearance became a respected tool. Tulsa stepped up its ongoing floodplain clearance program. Capital packages routinely included modest funding for acquisition, which the city used as local match with FEMA funding for a continuing pre-disaster floodplain clearance program. By the end of the decade, Tulsa had cleared more than 1,000 of its most dangerous buildings from its floodplains, using the open lands for parks, trails, open space storage, and flood control works.

For the first time since at least statehood, the 1990s decade passed with no significant flooding in Tulsa.

1998–2002 — Collaboration and Expansion

In 1997, FEMA director James Lee Witt launched a new initiative named Project Impact, intended to empower local communities to reduce disaster losses. The idea was to scatter some FEMA money around the country, with few strings, and let locals come up with innovative ways to work out hazard-mitigation techniques, to create “disaster-resistant communities.” The ultimate goal, Witt said, was to develop public-private partnerships to change the culture, to establish new cultures that value preparedness and mitigation. In late 1998 Tulsa was fortunate to receive a Project Impact grant for $500,000. I became director of the Project Impact program, named Tulsa Partners.

The Project Impact grant extended over three years and allowed us to expand our hazard-mitigation work beyond flooding into other hazards. We focused on windstorms and tornadoes, lightning, extreme heat and drought, winter storms, hazardous materials, and terrorism after the 9/11 attack.

It also taught us the magic of working through public-private partnerships. Most first-responder organizations and major business leaders became enthusiastic participants in Tulsa Partners. In short order, we had a cadre of dedicated partners working on a very wide range of public
education and demonstration projects. They ranged from our "SafeRoom" initiative to "McReady." (See Sidebar 1.)

These partners were and are amazing — able, selfless, altruistic, interested in working together without personal gain, united by a common goal to build a disaster-resistant community. As James Lee Witt once said, there is something about the Project Impact process that reaches down into your community and brings out the best in the best of your citizens; he was right. As they worked together, they moved Tulsa into a new era of cooperation. (Wonder of wonders, Project Impact even brought us together with the Home Builders Association of Greater Tulsa, who became the best of partners for the SafeRoom initiative and the green-building initiative called the Millennium Center.)

It is really true that, when it comes to disasters, we have outgrown most of the turf building and petty competitiveness in favor of collaboration and partnership.

Another important advance was long-needed pre-disaster multi-hazard mitigation planning, which got under way in earnest around the turn of the century. Shepherded by planner Ron Flanagan, Tulsa's plan was one of the first approved in the nation and laid out a road map for long-term work toward becoming a disaster-resistant community.

When the Project Impact grant expired after three years, the City of Tulsa and various other sponsors continued to fund the program for several
years. In 2000 we had established a 501-C-3, Tulsa Partners Inc., now ably directed by Tim Lovell, which serves as a useful vehicle for mobilizing public and private donations and creating innovative programs.

2002–2008 — Sustainability
Recent Tulsa Partners projects include continuity planning for nonprofits and small businesses, in conjunction with the Institute for Business & Home Safety; disaster safety for children and care providers, in partnership with Save the Children; and public education and planning for preparedness and mitigation.

At the turn of the new millennium, we expanded our scope again. We had long contended that hazard and environmental issues are two sides of the same coin. For examples, disasters generate tremendous waste and losses; and environmental problems are, in essence, slow disasters. If a house blows away or washes away, it is not sustainable. The most recent expansion of our program includes a shift toward sustainability. Our upgraded goal is to build a disaster-resistant, sustainable community.

This goal is at the heart of one of Tulsa Partners' current projects. Still in the planning and fund-raising phase, it is named the Millennium Center. A dedicated group is working to build this demonstration house at the Tulsa Zoo to provide fun, family-friendly, hands-on education on how to live safely and in harmony with Mother Nature.
Sidebar 1
Example Projects

Here are some examples of Tulsa-based initiatives that may offer lessons for people working to build disaster-resistant, sustainable communities and live in greater harmony with nature. Many of these projects were born in Tulsa Project Impact or share a similar philosophy.

Tulsa Partners

Tulsa Partners Inc. is a 501-C-3 nonprofit program that continues the work begun by FEMA's Project Impact: creating partnerships to build disaster-resistant, sustainable communities. It serves as a catalyst for collaboration in a broad range of programs, generally related to grassroots disaster management and sustainability. Public-private partners collaborate to accomplish their mission: to advance community goals, enhance quality of life, and create a more livable, safe, and sustainable community, in harmony with each other and nature.

FIGURE 4.5 Tulsa Partners is an open, inclusive group working for a safe and sustainable community. Tulsa Partners photo.
FIGURE 4.6 Volunteers paint murals in shopping centers, hold pancake breakfasts, sponsor special displays and events, and conduct other education and demonstration projects. Photo by Ann Patton.

Over the past decade, Tulsa Partners has fielded more than 300 partners and hundreds of volunteers. This program has received some dozen awards, including several national awards, as well as grants from national and local organizations.

Funded by grants and donations, Tulsa Partners operates through a governing board, advisory committee, and numerous project-specific committees. It specializes in incubating innovative projects, deriving lessons learned, then institutionalizing those projects with other groups and proceeding to explore new ideas. Some of the best programs have been started by partners within their own organizations, sometimes independently and other times in concert with Tulsa Partners. Several of these programs are described in the following paragraphs.

See also www.TulsaPartners.org.

StormReady

As members of Tulsa Project Impact, the National Weather Service Tulsa staff in 1999 created a new program named StormReady. StormReady established preparedness criteria communities should meet to help them survive weather emergencies. For examples, a town would need to establish a 24-hour warning system and emergency operations center, develop a formal hazardous weather plan with trained spotters, and provide public readiness education. When the
FIGURE 4.7 Tulsa Partners is an open, inclusive, and diverse group. Tulsa Partners photo.

criteria are met, the Weather Service will declare the community is StormReady.

The Weather Service quickly took the program nationwide. As of January 2008, 50 communities have been designated StormReady sites. See also http://www.stormready.noaa.gov/.

SafeRooms

Tulsa lies in the heart of Tornado Alley, but houses generally have been built without basements or other shelters. In 1998, when Texas Tech University developed new technology for building tornado SafeRooms, Tulsa Partners seized the opportunity to popularize them.

SafeRooms are specially anchored and armored closets or similar small enclosures. They can be built in new or existing buildings, inside or outside, above- or below ground, to provide safe shelter in even the most dangerous tornadoes.

With $50,000 from FEMA, Tulsa Partners formed a partnership with the Home Builders Association of Greater Tulsa to create some high-profile demonstration SafeRooms, coupled with an aggressive public-education program. When the disastrous May 1999 tornado hit Oklahoma, President Clinton kicked off a FEMA-supported SafeRoom initiative, which was later replicated in some other states, too.

continued
Within a few years, tens of thousands of SafeRooms were built across Oklahoma. They were used successfully in subsequent tornadoes, such as the 2003 tornado in Moore, OK.


**McReady**

In 2003, Tulsa Partners teamed up with McDonald’s to provide a month-long family-preparedness blitz in McDonald’s restaurants. The program, dubbed McReady, became institutionalized statewide under auspices of the Oklahoma Emergency Management Department.

Spring is the worst season for Oklahoma severe weather. The McReady program links emergency managers across Oklahoma with partners such as the National Weather Service and the Oklahoma Gas and Electric Company. Every April, they set up educational kiosks in McDonald’s restaurants, inexpensive grids stocked with family-preparedness guides and other storm-safety materials printed by partners. McDonald’s stores print survival tips on tray liners and bags. The low-cost program lasts a month, offering information to the thousands of customers who frequent the state’s 170 McDonald’s stores each day.

See also www.McReady.org.
Tulsa Human Response Coalition

Tulsa’s nonprofit agencies have banded together to plan for and manage social services during emergencies. The Tulsa Human Response Coalition includes 50 agencies and first-responder groups. THRC goals are to work together to foster collaboration and communication, share resources, and reduce duplication of effort during emergencies. The

continued
FIGURE 4.10 McReady partners kick off their annual blitz of preparedness information, 2004. Photo by Bob Patton.

group facilitates the human-services aspects of planning, preparedness, mitigation, response, and recovery to ensure effective service delivery. Example projects include emergency mental-health services and life-saving intervention during extreme heat and winter storms or other crises.

The following are among the noteworthy advances in the group:

1. A plan for managing spontaneous volunteers during a disaster.
2. A communications and call center connecting callers with social services and other resources through the 211 helpline.
3. A backlash-mitigation plan, an innovative plan to help the community handle a crisis that could result in retaliation against a specific group (such as Muslims after the 9/11 attack).

See also www.CSCTulsa.org.

First Responders

Tulsa first-responder organizations have a broad spectrum of programs, some inspired or encouraged by Tulsa Partners. Collaboration is the norm and the key to success. The Tulsa Area Emergency Management Agency serves as a central coordinator and supporter for many of these
activities. First responders meet regularly in several venues, including a standing Homeland Security Task Force, to share information and ideas.

Activities include Community Emergency Response Teams, a police Disaster Response Team, and a Volunteers in Police Service cadre. Tulsa has a stellar constellation of partners and programs related to emergency medicine and public health, generally arising from the Emergency Medical Services Authority (ambulance services), Metropolitan Medical Response System, Medical Reserve Corps, Tulsa Health Department, and university medical programs. One current focus is planning for public-health emergencies and pandemic flu.

See also www.OKMRC.org.

**Disaster-Resistant Business Council**

Tulsa is strongly committed to encouraging continuity of operations planning for businesses, nonprofits, and government agencies.

In 2007 Tulsa Partners volunteers formed the Disaster-Resistant Business Council to help spearhead continuity planning. The DRBC is chaired by State Farm Insurance executive Dave Hall. It is a national pilot for the Institute for Business & Home Safety's Open for Business® program. Members include the Tulsa Metro Chamber of Commerce, the Association of Contingency Planners, and the Oklahoma Insurance Department. The DRBC supports Open for Business® planning through workshops, public events and education, direct training, and collaboration with other programs. Examples of recent events include disaster-planning workshops for long-term care, hospitals, businesses, and child-care providers.

See also www.IBHS.org.

**Save the Children/Tulsa Partners Initiative**

In 2007 Tulsa Partners joined with the international Save the Children group to establish a demonstration project. The general goal is to develop and document ways local coalitions can improve child safety in disasters.

With a wide variety of partners, the group is working to provide preparedness training for children and care providers; to provide continuity of care through Open for Business® planning; and to mobilize

continued
neighborhoods and the general community in support of children and their child-care centers.

They also developed a model children's annex to the community's Emergency Operations Plan. Tulsa has formally designated child-care centers as critical facilities — that is, safe and secure child care must continue in place even in times of emergency if the community is to function well and recover.

The Save the Children / Tulsa Partners initiative will be documented in a guidebook to help other communities learn from Tulsa's demonstration program.

See also www.SaveTheChildren.org.

Planning

Tulsa's commitment to hazards planning is perhaps best exemplified by Ron Flanagan, a planning consultant and activist whose dedication to Tulsa extends over more than 35 years. Notable plans include master drainage plans for all watersheds. Specialized plans guide floodplain management, prioritized capital and acquisition projects, protection of critical facilities, and hazard mitigation. Flanagan served as consultant and catalyst for many of those plans, including the City of Tulsa's hazard-mitigation plan; this prototype plan was adopted on November 25, 2002, one of the first in the nation. Mitigation plan
FIGURE 4.12 Tulsa's Centennial Park storm-water detention pond in downtown Tulsa. Photo by Ron Flanagan.

updates include man-caused hazards. A plan for hazard mitigation in historic buildings is under way.

Flanagan and others helped Tulsa expand the concept of disaster management to include broader issues and constituencies. For example, maintenance easements along drainage channels became the backbone of a community recreation trails system, now extending over more than 50 miles of trails with plans for more. Storm-water detention basins are used for open space and sports fields. Tulsa hazards planning trends toward integration into the larger community fabric.


Environmental Protection

Tulsa is greening up in recent years, with a growing commitment to the environment.

The Metropolitan Environmental Trust champions environmental causes in this area. The M.e.t. provides recycling education and services for Tulsa and its suburban communities. The M.e.t. has recycled 100 million pounds of newsprint in 15 years, for example. Funded by local governments, grants, and private donations, the M.e.t. is considered an authority

continued
and program catalyst on many environmental issues. The M.e.t’s secrets of success include working to build relationships, finding ways so everybody can win, and fostering collaboration, not competition.

Other programs focus on air and water quality. The poultry industry in northeastern Oklahoma and Arkansas has threatened the quality of Tulsa’s drinking water; Tulsa has launched a vigorous team effort to protect its excellent drinking water, long a source of civic pride.

Another noteworthy environmental program is run by the private nonprofit Up with Trees, whose volunteers have planted more than 16,000 trees at 400 sites along Tulsa’s streets and expressways since the program began in 1976. In 2007 Up with Trees joined with the city to plant trees along Tulsa flood-control channels and in detention basins, too.


The Millennium House and Millennium Center

Inspired by Project Impact, in the year 2000 Tulsa Partner Don McCarthy had a dream: to build a demonstration house that would show how to live safely, in harmony with the environment, at a modest price. He called it the Millennium House. Virtually without funding, except for $15,000 contributed by Tulsa Project Impact, McCarthy and volunteers nonetheless got his house built by 2004. It was open to the public for a year before it was turned over to a low-income family who can enjoy utility costs of little more than $100 a year.

McCarthy’s Millennium House inspired an even larger idea. Tulsa Partners pledged to build a permanent demonstration house, to show how to live safely in Tornado Alley while also protecting the environment. They named it the Millennium Center. After two years of team building, planning, and integrating hazard and environmental techniques, the planning group is currently raising funds to build and maintain the Millennium Center and its fun, family-friendly exhibits.

See also www.mctulsa.org.

A Disaster-Resilient Community

Tulsa’s skill in managing disaster was tested most recently on December 9, 2007, when an ice storm destroyed tens of thousands of trees and threw 75 percent of Tulsans into darkness. The power outage was the largest in Oklahoma history, with more than 600,000 customer accounts without electricity for upwards of a week or more.
FIGURE 4.13 December 9, 2007, ice storm left 75 percent of Tulsans without power. City of Tulsa photo.

In the Emergency Operations Center, Tulsa Mayor Kathy Taylor and her team developed a three-part recovery program:

1. Removing and disposing of more than 2 million cubic yards of debris.
2. Mobilizing volunteers, including church members and 96 electricians, to help with home repairs, restoration of electricity, and debris clearance.
3. Restoring the city’s shattered urban tree canopy, in a public-private wave of tree plantings by the city and Up with Trees.

Meanwhile, across the city, neighbors helped neighbors. The Tulsa Community Foundation launched a campaign to raise funds for emergency human needs. The Tulsa Human Response Coalition established a one-stop center, operated by the Tulsa Urban League, to help low-income people with critical needs. And the electric company and community planners turned their thoughts to long-term mitigation measures, including burying power lines.

See also www.cityoftulsa.org/Storm.asp.

These disaster-resilient programs evolved within days and weeks, born from a community habit—a culture, if you will—of collaborative hazard management, developed over many years in Tulsa’s search for ways to live safely in Tornado Alley in better harmony with nature.
Sidebar 2
Tulsa Chronology

1900–2000. National Weather Service records show tornado touchdowns somewhere in Tulsa County, on the average, nearly every year during the 20th century.

1908, 1923, 1943, 1957, 1959. Major floods on the Arkansas River at Tulsa. Records show the Arkansas flooded more or less nearly every year from statehood (1907) until 1964, when Keystone Dam was closed upstream from Tulsa by the U.S. Army Corps of Engineers.

1949, 1957, 1961, 1963, 1968. These years mark some of the early recorded floods on Mingo Creek and other tributary streams in Tulsa.

May 1970, Mother’s Day. Floods on Mingo and Joe creeks cause $163,000 damages and prompt the city to join the flood-insurance program and adopt its first floodplain ordinance. But the city failed to adopt maps that would effect floodplain regulation.

U.S. Army Corps of Engineers, Tulsa District, issues Haikey Creek flood report, the first in a series on Tulsa-area problem creeks.

June 8, 1974. Violent storms cause flooding on Mingo, Joe, Fry, and Haikey creeks. At least three tornadoes also ravage the city. Toll: more than $18 million in damages with more than 120 injured.

October 1975. Tulsa hires its first hydrologist, Charles Hardt, and begins developing comprehensive storm-water management policies.

December 5, 1975. F-3 tornado in Northeast Tulsa injures 38.


September 17, 1976. Tulsa imposes a building moratorium in floodplains with critical flooding problems until new maps and regulations can be devised. Moratorium lasted two years.

1977. Voters approve a bond issue for emergency flood-control projects, the first in many years.

1977–79. Changes in maps and regulations are adopted, including requirements for storm-water detention and specific permits for
floodplain or earth changes. Tulsa begins developing master drainage plans to coordinate changes within entire watersheds.

**April 19, 1981.** Easter tornado in East Tulsa leaves between $75 and $100 million damage, mostly in an industrial area.

**May 27, 1984.** Memorial Day flood kills 14, injures 288, and causes $183 million in damages. Tulsa imposes a rebuilding moratorium in repeatedly damaged floodplains until an aggressive program buys and clears 300 homes and 228 mobile home pads. Regulations and standards are strengthened and extended to entire watersheds. Tulsa creates a new Stormwater Management Department to centralize and focus flood-control activities.

**September 27, 1985.** Tulsa establishes a storm-water utility charge on water bills, $2 a month per household. Proceeds are used for maintenance, management, and planning.


**March 1987.** Researcher Claire Rubin finds that Tulsa County leads the nation (to that time) in federally declared flood disasters, with nine in 15 years.

1990. After a change in the form of government to mayor/council, Tulsa integrates storm-water management into a new Public Works Department. Floodplain acquisition programs continue throughout the decade, with Tulsa purchasing a few properties every year, often with FEMA assistance. By mid-1990s, Tulsa has cleared more than 1,000 buildings from its floodplains.

1992. FEMA gives Tulsa's flood program its best rating in the new Community Rating System, giving Tulsa citizens the lowest flood insurance rates in the United States. Tulsa continued to lead the nation in CRS ratings for more than a decade.

**April 24, 1993.** East Tulsa/Catoosa F-4 tornado kills seven and injures 100.

**April 19, 1995.** The Oklahoma City bombing destroys the Alfred P. Murrah Federal Building, killing 168, injuring more than 800, and convincing Tulsans that we need to plan for human-caused hazards as well as natural ones.

*continued*
1998. FEMA selects Tulsa for a $500,000 grant to start a new Project Impact program — to create public-private community partnerships for multihazard mitigation. The goal was to create a disaster-resistant, sustainable community. Project Impact expanded Tulsa's floodplain vision to include other hazards, including tornadoes. A broad spectrum of educational and demonstration projects addresses reducing risk from tornadoes, extreme temperatures, lightning, floods, and other hazards. Demonstration projects include tornado SafeRooms, historic preservation, social services, fire and law enforcement, Citizen Corps, CERT, and terrorism protection. The grant extends over three years, during which time the group creates a 501-C-3 nonprofit named Tulsa Partners Inc. to continue multihazard mitigation programs.

May 3, 1999. West Tulsa tornado. Tulsa Partners expands its focus again, this time working to marry hazard mitigation with environmental protection. They are working to create a Millennium Center at the Tulsa Zoo, with fun, family-friendly exhibits showing how to live safely in Tornado Alley in harmony with Nature.

2004–2008. Tulsa celebrates anniversaries of its 1984 and 1986 floods. At this writing, in 2008, Tulsa can mark more than two decades without a major flood in the city — a dramatic change from the years when Tulsa experienced a flood on the average of every other year or more often. An ice storm on December 9, 2007, causes the state's largest power outage. Tulsa launches an aggressive program to restore power, curb losses, and restore tens of thousands of downed trees. These points of progress are tribute to the community's dedication to reducing risk and creating a disaster-resistant, sustainable community.

Lessons Learned

Here are a few of the lessons we've learned — almost all of them learned the hard way — on Tulsa's journey toward becoming a disaster-resistant, sustainable community:

- Start with a small hub of your very best people — kind, committed, selfless, and statesmanlike. Develop a shared vision. Then build a holistic, inclusive partnership around that heart.
FIGURE 4.14 Flood projects can be beautiful, as shown in the Centennial Park detention pond. Photo by Ron Flanagan.

- Engage a dedicated, able program champion.
- Establish broad goals, specific objectives, and flexible strategies that can be adapted to avoid land mines, avert problems, and seize opportunities.
- Think holistically. The more comprehensive your program is, the larger your constituencies can be.
- It is important to take a negative mission (such as regulating floodplain use) and convert it into a positive, synergistic mission (such as also providing community parks and open space).
- Find something that is working well and attach your program to it. It might be the Red Cross in one town or the United Way in another, or perhaps the churches or the library or the city council. Every town will have a good starting place.
- Partnerships should be mutually beneficial, and all strategies should be win/win. Learn to listen well to what your partners need, and find ways to deliver it — as long as it does not compromise your base principles.
- Marry opposites for a stronger program. As Dr. Mark Meo at the University of Oklahoma taught us, good public policy happens at the intersection of grassroots citizens and technical experts. It's
true with many diverse populations. Engage academics and marry them with common-sense common folk, too, for another example.

- Never, never underestimate the power of the news media. Find ways to inspire them to share your community vision. You are challenged to become a translator of technical jargon into memorable sound bites that motivate humankind.

- Plan to seize any postdisaster window of opportunity. It may be in your town, but you can also take advantage of disasters or trends (such as a jag of interest in green building) elsewhere that capture the public interest. Shamelessly take advantage of the hazard de jour and build on it.

- Once you are certain of your long-range goals and principles, dare to invite in your adversaries, listen sincerely, learn from them and seek to convert them into supporters.

- Celebrate success. Always spin to the positive. There are no failures, only lessons learned.

- Find your best management style. We use a jazz-band system we learned from a Tulsa planner named Gerald Wilhite, with light central control and maximum freedom for innovation; shared vision holds it all together and keeps it working in harmony.

- Rejoice in independent successes. Perhaps the best measure of success occurs when people create independent programs that further your mission. The Tulsa motto (perhaps the secret to collaboration success) is “There is no end to what you can accomplish in this world if you don’t care who gets the credit.”

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HAZARD MITIGATION IN BERKELEY, CALIFORNIA: PARTNERING FOR COMMUNITY ACTION

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