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EMERGENCY MANAGEMENT

February 11, 1997

Ms. Cora Fernandez
Flood Control District of Maricopa County
2801 W. Durango Street
Phoenix, AZ 85009

Dear Ms. Fernandez:

Please find enclosed the reports you requested concerning flood damage in Maricopa County from 1990-1995. I have enclosed some additional material for 1996 that may be useful.

Our office does not separate damage by type, but rather combine it as a single entity. Therefore you will note that some reports will refer to high winds in a storm cell, but no rain will be associated with it so the usefulness of that information to you concerning flooding is minimal. I regret the inconvenience.

We also maintain logs from the Emergency Operations Center which I did not attach. They are quite large and may be of minimal value to your purposes; however, if you feel they would be useful please visit us and we can show them to you.

If we can be of any further assistance please do not hesitate to ask.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dennis A. Cvancara".

Dennis A. Cvancara
Emergency Services Planner



November 18, 1996

Mr. Bill Wojcik
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Wojcik:

The following report is a synopsis of the weather-related damage affecting Maricopa County. This report is similar to the last one you received, in that it covers several months, due to the minimal occurrences of damage related to problematic weather phenomena. Weather-related damage throughout the period was extremely sporadic; however, where damage occurred, those periods are noted.

Soon after submitting my last report the Valley received a record rainfall on February 1st with some areas receiving as much as .81 of an inch of rain. The official reading of .44 inch of rain at Sky Harbor International Airport was .02 of an inch above the old record set in 1919. The only damage reported was an increase in the number of mostly minor automobile accidents due to slick roads caused by oil and grime buildup. A severe accident closed the southbound lanes of Interstate 17 near Indian School Road in Phoenix for about two hours as a result of rain slick roads when a semi-tractor trailer and car collided and another rig ploughing into the first collision. No serious injuries were reported.

On February 25th, a low-pressure system in the Pacific Northwest brought another half an inch of rain to the Valley. Strong gusty winds knocked down several utility poles near Grand Avenue and Beardsley Road, starting several small brush fires. Scattered power outages were reported by the Maricopa County Sheriff's Office Dispatch Center.

The only other weather-related event of the spring occurred on March 13th, when the Valley experienced rain and hail from a strong winter storm system that crossed Arizona.

- The National Weather Service issued a severe thunderstorm Warning for central Maricopa County and a tornado Warning for the Cave Creek and Carefree areas as a result of the storm. A weather spotter reported seeing a funnel cloud 10 miles southwest of Cave Creek, but it apparently did not touch down and no damage was reported.

- Three-quarter inch hail pounded Deer Valley Municipal Airport and blanketed all the ramps in a 15 minute flurry. No damage was immediately reported.
- Luke AFB reported pea-size hail and rain showers.
- Fire officials reported hail and heavy winds knocked out power for a very short period of time in areas north of Scottsdale.

The next weather event occurred on July 7th, as high winds and lightning swept through the Valley, but did little to relieve the drought situation.

- Sixty mile per hour winds were reported and lightning touched off several small fires. A fire was reported at 56th Street and Camelback as lightning ignited trees and oleander bushes.
- One west Phoenix neighborhood near 28th Avenue and Durango Street recorded 1.2 inches of rain; however, the official rainfall at Sky Harbor International Airport was a trace.

On July 9th, another monsoon storm passed through the Valley. Sky Harbor International Airport recorded nearly a half inch of rain with other Metro areas receiving a quarter inch.

- About 1500 SRP and APS customers lost electrical power as winds broke a number of poles. Restoration of power to about 40 customers in Queen Creek, the hardest hit area, took two days.
- Lightning started a house fire in northwest Phoenix and a house under construction in northeast Phoenix.

On July 14th, a monsoon storm drenched the east Valley, dumping 1.73 inches of rain in Queen Creek and .91 inch in Carefree. In the northwest Valley, a weather spotter reported 1.83 inches of rain at 83rd Avenue and Thunderbird. Lightning was reported to have struck a roof, causing water damage to a Sun City hospital.

On July 25th, another monsoon event was experienced by the Valley when thunderstorms generated high winds and blowing dust.

- Heavy winds blew down power lines and trees throughout the east Valley and portions of Phoenix and the west Valley.
- About 15,000 APS and SRP customers lost electricity for at least part of the night.
- Strong winds blew apart a hangar door and flipped over an airplane at Chandler Municipal Airport.

- Wind gusts of 75 mph were reported at Deer Valley Airport at about 7:00 p.m.

The most severe weather event of the summer occurred on the evening of Wednesday, August 14th. The severe storm was caused by a slow motion collision of two storm systems over the Valley, which generated severe thunderstorms which pushed through the north Valley. The quick moving front, with winds up to 100 mph, removed several roofs or parts of roofs, ripped off roof tiling, tore down fences, blew off roof top air conditioners, knocked out traffic lights, uprooted trees and snapped at least 400 power poles, leaving more than 270,000 residents without electricity.

- The storm was forecast throughout most of the day by the National Weather Service and numerous timely and accurate Watches and Warnings were issued.
- An initial storm report filed by Mr. Mike Franjevic of the Phoenix National Weather Forecast Office, indicated through radar that no tornadoes were imbedded in the storm front, but the storm damage path was consistent with a macro burst with imbedded micro bursts. His conclusion seemed to enjoy putative acceptance.
- The storm struck hardest in the north Phoenix and Glendale areas at about 6:30 p.m. and pushed toward Gila Bend. Deer Valley Municipal Airport reported a record-breaking wind gust of 115 mph at 6:38.
- The Central Arizona Chapter of the American Red Cross established 4 shelters for people left homeless by storm damage or those without electricity wanting a place to cool off.
- One traffic accident casualty was reported as a result of the storm. A motorist died in a collision at 7th Avenue and Maryland Street where traffic lights were not working.
- 250,000 APS and 20,000 SRP customers were initially without power, with a total of 18,000 left without power the second night and 6,200 the third day. Power was restored by Saturday, August 17th, to over 99% of all customers.
- All 29 of the Peoria Unified School District schools were damaged to some degree. Among the most damaged included Sunrise Mountain in Peoria (lost permanent water supply), Sahuaro Ranch School at 10401 N. 63rd Avenue (lost 75% of the roof and half the rooms were then flooded), and Kachina Elementary School in Glendale (12 rooms were unusable and the roof over the kindergarten was removed).
- An Albertsons grocery store at 59th Avenue and Beardsley Road was battered by the storm, hurting three people.
- The Arrowhead Community Hospital at 18701 N. 67th Avenue in Glendale received extensive roof damage, forcing the closure of the surgical and delivery units.
- The Honeywell Plant at 53rd Avenue and Bell Road suffered heavy damage including

windows being blown out. Twelve hundred workers were kept away from work the next day.

- Lightning started four fires in Phoenix, including one at an apartment at 37th Avenue and Hadley Street and another at 16th Street and Bethany Home Road.
- The Northwest Garden Apartments at 9350 N. 67th Avenue received an estimated \$700,000 worth of damage as the storm collapsed the roof over 8 units.
- At 91st Avenue and Indian School Road and at 127th and Glendale Avenues, power lines fell on top of cars, trapping the occupants until the power company crews lifted the wires.
- Fences around the Arizona Department of Juvenile Corrections facility at Adobe Mountain were damaged by falling trees and 40 vehicles were damaged, two of them hit by a dumpster blown through a parking lot.
- US West reported 1 to 3 percent of their 1.4 million customers lost telephone service or about 40,000 lines had problems.
- About 75,000 of Cox Cable 430,000 Valley subscribers lost cable-TV service
- Governor Symington declared a state of emergency, committing \$200,000 for emergency personnel overtime and for damage to public property.
- The Small Business Association, as a result of the severe damage, was authorized by the Federal government to establish a loan office in Peoria to provide low cost loans to eligible individuals. The office, which was opened on September 24th and programmed to close on November 25th, provided 412 loan applications, received 112 filled out applications and approved 57 for \$652,000 worth of loans.

The last storm of the monsoon season occurred on Thursday, August 29th in the Gila Bend area when the entire Town of Gila Bend lost power due to a massive storm.

- Twenty three power poles were toppled and the main line and backup lines were lost to over 3,000 APS customers in Gila Bend area.
- Emergency shelters were set up in Gila Bend's Town Hall, Community Center and Sheriff's substation, which had generators providing lights and air conditioning.
- Twenty-two power poles in the northwest Valley were toppled and 20,000 APS customers lost power in the storm; all but 40 were restored to power by noon Friday.
- About 150 SRP customers in the northwest Valley lost power at about 10:00 p.m. but were restored to power by Friday morning.

- Luke AFB recorded winds at 101 mph

In summary, Maricopa County received substantial damage during the month of August, with other months recording insignificant amounts. A preliminary damage assessment determined 8600 homes and other structures were damaged at an estimated cost of \$44,000,000 dollars, most of it covered by home owners insurance.

Sincerely,

Dennis A. Cvancara
Emergency Services Planner

DC/dc

cc: David R. Smith, County Administrative Officer
Tom Buick, Department of Transportation
Jill Herberg-Kusy, Director, Planning and Infrastructure Development Department
Jim Phipps, Flood Control District

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February 2, 1996

Mr. Bill Wojcik
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Wojcik:

The following report is a short synopsis of the weather-related damage affecting Maricopa County from November 1, 1995 to February 1, 1996. This report is similar to the November 15th report, in that it covers several months due to the minimal occurrences of damage related to problematic weather phenomena. Weather damage information for Maricopa County during November, December and January was minimal with the exception of the January 17th wind storm.

As a personal note, please pass on our gratitude and congratulations to Doug Green for the briefing and forecast he provided to Warren Leek and myself prior to the January 31-February 2 weather event. His forecast was "spot on" and we were able to adjust accordingly. Please thank him for a job well done.

The first weather-related event occurred on November 1st as heavy rain blanketed the area as a storm pushed through the Valley.

- At 9:15 p.m., lightning struck the front lobby of the Sonoran Center, a residence hall on the campus of ASU, putting a 4-foot-wide hole in the roof. No injuries were reported.
- In Glendale, a Salt River Project (SRP) utility worker received a minor shock when lightning struck about 150 feet away from his pickup. He was treated at the scene and released.
- Arizona Public Service Co. and SRP reported brief electrical power outages to 1,500 customers.
- Rain began at sundown and by 10:00 p.m. more than three-quarters of an inch was reported in central Phoenix while unofficial reports indicated up to 3 inches had fallen in some places in north Phoenix.
- Flooding occurred on numerous streets and in washes. Street lights were knocked out of service, but no serious accidents were reported as a result.

The next reportable weather-related event occurred on January 17th as monsoon-like high winds were generated by a storm system from the Pacific, which further intensified as it moved through California and hit the Valley full force.

- Seventeen people were injured on Interstate 10, in front of Compton Terrace at Firebird Lake, as

gale-force winds stirred up dust, reducing visibility at times to zero. The reduced visibility caused 25 vehicles to pile up. The chain reaction accident, which started at 12:20 p.m., included two large trucks, an ambulance and 22 cars. All seventeen of the injured were transported to local hospitals, three in serious but not life threatening condition. No deaths were reported. The westbound lane was reopened at 2:15 p.m. and the eastbound lane was reopened at 5:45 p.m.

- In Tempe, an NFL spokesman reported that several awnings that sheltered the auxiliary press area in the northwestern corner of the upper deck of Sun Devil Stadium and the top of the press area were damaged. Super Bowl XXX banners were blown off light poles on the Rural Road Bridge. High winds halted construction at the NFL Experience north of Sun Devil Stadium. Workers tied down banners and tents, and some scaffolding was taken down.
- At the Paradise Cattle Feed Co., at Germann and Higley Roads southeast of Gilbert, a dairy manure fire was reported by Rural/Metro Fire Department. The 3:00 p.m. fire was whipped nearly out of control by wind gusts reaching 51 mph. Smoke from the fire caused a 10-car pile up at Ellsworth and Germann Roads as visibility was seriously reduced. No injuries were reported.
- At 12:23 p.m., electrical power was lost to 10,000 customers in Tempe and east Mesa when high winds toppled a 12,000-volt power line. An SRP spokesman reported that a high voltage power line wrapped around three 6,900-volt lines near McClintock Road and University Drive, which subsequently caused a power circuit to shut down.
- Power outages snarled traffic in Tempe and Mesa as police officers directed traffic through intersections whose signals were out. No major accidents were reported. Power outages were reported at Mesa's Fiesta Mall, Webster, Washington, and Roosevelt Elementary Schools, Rhodes Junior High School and Mesa Unified School District. The power outage was short-lived as emergency crews restored power in less than an hour.
- Top wind speeds were reported at Deer Valley Airport at 55 mph. Other reports indicate wind gusts up to 51 mph in the southeast Valley and 39 mph at Sky Harbor International Airport.

In summary, except for the January 17th monsoon-like wind, this meteorological report of weather-related damage over the reporting period, is best described as non-eventful. You will note this report is several pages shorter than the last report with its attachment. If you have any questions or need any further clarification, i.e. dates, places or times, please do not hesitate to ask.

Sincerely,

Dennis A. Cvancara
Emergency Services Planner

DC/dc

cc: David R. Smith, County Administrative Officer
Louis A. Schmitt, P.E., ACA Infrastructure Operations
Jill Herberg-Kusy, Director, Planning and Infrastructure Development Department
Jim Phipps, Flood Control District

November 15, 1995

Mr. Bill Wojcik
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Wojcik:

The following report is a synopsis of the weather-related damage affecting Maricopa County during the past several months. No reportable weather-caused damage was experienced in May, June and October, in contrast to the months of July, August and September, when several separate incidents of weather-related damage occurred.

On July 7th, a lightning strike located north of Troon Mountain near Rio Verde Drive and 128th Street caused about \$10,000 worth of damage to desert property in the area. The cost of fighting the fire, which spread as far east as the McDowell Mountain Park, is estimated at over \$1,000,000 with the cost borne mainly by the Forest Service. An attached report, dated July 10th provides greater detail.

On Tuesday, July 11th, the first big storm of the summer swept through the East Valley in about 30 minutes, with winds clocked at 65 mph and an impressive show of lightning bolts causing several fires.

- Lightning struck a home in the 6400 block of East Northridge Street at 8:45 p.m., igniting the roof area, which collapsed.
- The Mesa Fire Department responded to nine other lightning-caused house fires, all of which received light damage.
- In Queen Creek, 70 mph winds blew the roof off a mobile home in the 20600 block of Superstition Drive.
- Rural/Metro reported more than 30 lightning strike calls including several tree fires, small brush fires, downed power lines and roof fires.
- A house fire in Fountain Hills was started by a lightning strike.

- About 1300 Salt River Project (SRP) customers lost power in the far southeast portion of the County due to electrical failure, as 74 power poles were blown down.
- A two-vehicle accident at Cactus and Scottsdale Roads, causing injuries to several motorists, was blamed on storm-caused slick streets.
- Two-thirds of an inch of rain was reported in Queen Creek. East Mesa received one-third of an inch of rain.

On Wednesday, July 12th, another severe thunderstorm entered the East Valley, again downing power lines, sparking fires and damaging buildings.

- A roof collapsed at a strip mall at 1964 N. Alma School Road in Chandler caused by the heavy weight of water on the roof.
- The City of Chandler reported light damage from 14 lightning-caused fires. Most were brush fire related.

On Friday, July 28th, Phoenix recorded its second highest official temperature reading of 121 degrees.

- Energy consumption was at record levels.
- Fourteen power poles were toppled, cutting power to six thousand homes in the Mountain Park Ranch area.
- A microburst windstorm caused power outages from 43rd to 51st Avenues and Northern Avenue to Cactus Road shortly after 11:00 pm. Friday. A tree fell on a Glendale power substation, causing power outages and knocking out air conditioning in about two thousand homes.
- The gymnasium roof at Coronado High School at 2501 N. 74th Street in Scottsdale received an estimated \$98,445.00 in damage from a microburst.
- Arizona Public Service (APS) reported widespread outages on Saturday caused by failed capacitors at the Pinnacle Peak substation west of Scottsdale Road near Pinnacle Peak Road. Six capacitors failed on a 230,000 volt transmission line, which caused a major drop in voltage statewide. Most people felt a "bump", a seconds-long loss of power.
- The Central Arizona Chapter of the American Red Cross established a shelter at Ironwood High School in Glendale for residents who lost power for longer periods of time.

In August, only one major event was recorded. On Sunday, August 20th, a storm front reaching from Mexico to Interstate 40 moved slowly westward across the Valley, leaving swollen waterways, flooded streets, fires and blackouts.

- Lightning struck and killed a dog and injured two 15-year-old boys out walking at 8:00 p.m. near 15th Street and Piute Avenue near Union Hills Drive.
- About 3.29 inches of rain fell at Durango and 28th Avenues and an official reading of 1.5 inches of rain was recorded at Sky Harbor International Airport.
- The National Weather Service issued a flash flood warning valid until midnight August 20th.
- Flooding was reported along Interstate 17 and Interstate 10, but storm-related accidents were few.
- APS reported 6,000 customers lost power for a short period of time. Downed power lines were reported at Scottsdale Road and Princess Boulevard in Scottsdale. Another 150 customers in an area bounded by Greenway, Cactus, Sarival and Dysart Roads were also without power.
- In Mesa, SRP reported 20 homes were without power because of the storm. Mesa Fire Department also reported 30 lightning caused fires, including blazes in two houses, one of which was triggered by burning embers that fell from a nearby palm tree.
- In the City of Tempe, 2,000 SRP customers lost power due to damage at the Priest Drive and Broadway Road substation.

September's major weather activities were confined to the end of the month, with the exception of high winds and blowing dust as remnants of former Hurricane Henrietta moved through the valley on September 6th.

- High winds and heavy rain may have caused a 10-car derailment of a freight train near Wittman.
- APS reported power outages west of Gila Bend and in the Garfield neighborhood in Phoenix. SRP reported 300 homes without electricity in the east valley.

Late in September, severe weather damage was reported in many of the east valley communities with the most damage reported in Queen Creek and in Scottsdale. A severe thunderstorm struck Queen Creek in the evening of September 27th and moved north into the Scottsdale area. Official rainfall recorded at Sky Harbor International Airport was .96 inch, but 2.92 inches of rain was recorded at 66th Street and Indian School Road.

Queen Creek reported major damage from the storm packing 80 mph winds late Wednesday and early Thursday, September 27-28.

- A potato-packing shed near Rittenhouse and Ellsworth Roads was completely destroyed, with portions of the shed blown onto the railroad tracks.
- Nine buses were disabled and three others were damaged by flying debris which cancelled school for the day.
- Power lines and supporting poles were downed in a number of locations in the Town leaving many homes without power.
- The Queen Creek Latter-Day Saints Welfare Farm lost 600 acres of cotton and 100 acres of milo due to the high winds and golf-ball size hail. About 4,000 acres of cotton crop was destroyed in the Queen Creek area.
- The Queen Creek High School received extensive roof damage and officials believed the repair estimates to be in excess of \$100,000.
- Several trailers were slightly damaged.

Scottsdale received some damage related to runoff in the 66th Street and McDowell Road area. Ten houses were flooded with up to 18-24 inches of water. City officials blamed downed trees, particularly a mesquite tree that fell into the drainage canal, and over 2 inches of intense rain for the damage. Additionally, a levee failed at the Papago Sports Complex at McDowell and 64th Street, sending muddy water into the drains and clogging them.

- The National Weather Service speculated that a microburst windstorm may have caused the damage. Three-quarter inch diameter hail was reported.
- Hundreds of trees were blown down in the downtown area. The Civic Plaza received \$25,000 in damage caused by fallen trees.
- Scottsdale Memorial Hospital lost power at 2:30 a.m. and relied on backup power sources.

Throughout the Valley, over 23,500 APS and 2,000 SRP homes lost electrical power at approximately 1:00 a.m. as wind gusts downed power poles and lines. In Phoenix, the roof of the Levitz Furniture Store at 2801 W. Indian School Road collapsed due to heavy rain. In Chandler, heavy rain caused a broken truss and the partial collapse of the roof at the Native New Yorker Restaurant at 1964 N. Alma School Road, resulting in an estimated \$20,000 damage. Also, in Chandler, a lightning strike started a fire, causing \$60,000 worth of damage to a vacant house in the 1100 block of East Linda Lane at 11:20 p.m.

Despite all the activity over the summer months, no deaths or injuries were reported in Maricopa County during this period.

Sincerely,

Dennis A. Cvancara
Emergency Services Planner

DC/dc

Attachment

cc: David R. Smith, County Administrative Officer (wo/a)
Louis A. Schmitt, P.E., ACA Infrastructure Operations (wo/a)
Jill Herberg-Kusy, Director, Planning and Infrastructure Development Department (wo/a)
Jim Phipps, Flood Control District (w/a)

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March 8, 1995

Mr. Bob Survick
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Survick:

The following report is a short synopsis of the weather-related damage affecting Maricopa County during the months of January and February 1995. No report was prepared for the months of October through December since no weather-related damage was reported in the County.

One rain event with three consecutive storms occurred during the month of January as fast moving storms passed through the Valley in five days. On Wednesday, January 4th, rainfall amounts ranged from 2.94 inches of rain in the Scottsdale area to .90 inch of rain in Phoenix. Other locations reported as much as 2 inches in Apache Junction, 1.2 inches in Mesa, 1.25 inches in Chandler, .93 inch in Tempe and .90 inch in Gilbert. The heavy rainfall caused road flooding in the Indian Bend Wash area. Two vehicles were damaged and one motorist was rescued by the Rural/Metro Fire Department near 77th and Roosevelt Streets. Road closures included the Salt River crossings as SRP released 20,000 cfs of water over Granite Reef Diversion Dam, and some areas of Scottsdale due to standing water. Pooled or running water closed roads at Pima Road and 92nd Street; Cactus Road between Pima and Hayden Roads, the north and southbound lanes of the 3400 block of North Scottsdale Road and the 7000 block of East Carefree Highway.

In February, a tropical storm entered the State generating over an inch of rain over the Verde watershed area. As a result of the rain and the runoff, water storage areas on the Verde system were filled and SRP was required to release water into the Salt River. In the late evening of Wednesday, February 15th a peak release rate of 97,550 cfs was reached at 9:00 p.m.

Maricopa County declared a local emergency in anticipation of the seriousness of the predicted release rates. However, in the end, release rates were not as high as first anticipated and serious damage was not realized. Two submittals by Maricopa County were made to the Federal Emergency Management Agency Region IX in support of a federal disaster declaration. These claims included \$597,500 by the Maricopa County Department of Transportation for

road and road way damage and \$20,000 by the City of Phoenix for damage to the Verde Water Treatment Plant.

In summary, during the last four months, little weather-related damage has occurred in Maricopa County.

Sincerely,

Dennis A. Cvancara
Emergency Services Planner

DC/mr

cc: David Smith, County Administrative Officer
Louis A. Schmitt, P.E., ACA Infrastructure Operations
Tom Buick, Director, Planning and Infrastructure Development
Department
Jim Phipps, Flood Control District

May 1, 1995

Mr. Bob Survick
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Survick:

The following report is a short synopsis of the weather-related damage affecting Maricopa County during the month of April 1995. Maricopa County experienced only one potentially serious weather event on Sunday, April 10th. Weather damage was caused by high winds and severe wind gusts.

At approximately 3:00 p.m., on April 10th, high winds snapped a row of utility poles and left electric wires hanging close to a row of houses in the Scottsdale area.

- Ten homes were evacuated by the Rural/Metro Fire Department along 64th Street north of McDowell Road near Oak Street after a pole holding a transformer snapped. That caused a chain reaction that bent six to eight other poles.
- High winds spread several small brush fires, including a 3-acre blaze in the 700 block of West Southern Avenue.
- Salt River Project reported downed power lines had left an estimated 7,000 homes and businesses without power.
- Arizona Public Service reported 10,000 of their customers without power in the far west Valley.
- Phoenix Fire Department responded to 11 calls of wind-damaged power lines. No serious problems were experienced.
- The top wind gust reported by the National Weather Service was 46 mph recorded at Sky Harbor International Airport.

No serious damage was reported in Maricopa County due to weather-related events during the month of April.

Sincerely,

Dennis A. Cvancara
Acting Director

DC/mr

cc: David Smith, County Administrative Officer
Louis A. Schmitt, P.E., ACA Infrastructure Operations
Jill Herberg-Kusy, Acting Director, Planning and
Infrastructure Development Department
Jim Phipps, Flood Control District

Another microburst was reported six miles south of Cave Cree at 4:45 p.m. Several sightings of a funnel cloud were reported south of Ahwatukee, but no sightings of it touching down were reported.

- The City of Phoenix estimated the total damage for the weekend to be more than \$400,000. More than 517 trees in the parks and on city property were reported destroyed in addition to damage to street lights, traffic signals and municipal buildings.

The next storm period started Saturday and Sunday, September 10th and 11th as another monsoon storm entered the Valley.

- On Saturday night, wind gusts as high as 52 mph hit Buckeye, toppled two trailer homes and knocked down power poles.
- On Sunday, Rural/Metro fire crews were busy battling several lightning-triggered fires, including a brush fire in Queen Creek and a palm tree fire in the west Valley.

On Tuesday, September 13, afternoon storms moved through the Valley, damaging the Littleton Elementary School, flooding roads, knocking down power lines and causing vehicle accidents.

- At 2:45 p.m., the Littleton Elementary School at 115th Avenue and Buckeye Road was damaged by a microburst packing 100 mph winds. Seven students received minor injuries and one teacher received serious injuries as the roof of the school was ripped off and raining debris fell into the classroom.
- Approximately a mile of power poles on 107th Avenue were toppled moments after the school was damaged.
- On Superstition Freeway, near Price Road, the rain and the sun were blamed as the cause for nine separate accidents which piled up 27 cars during rush hour. No one was seriously injured.
- In south Tempe, a half-dozen power poles were snapped and toppled onto 56th Street between Elliot and Warner Roads.
- The National Weather Service issued a special weather statement at 2:33 p.m. followed by a severe thunderstorm warning at 3:00 p.m. for central Maricopa County and the Phoenix metropolitan area.

In summary, weather damage caused by this year's monsoon season was most severe during the month of September. Maricopa County suffered one death and numerous injuries, all attributable to the

March 31, 1995

Mr. Bob Survick
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Survick

The following report is a short synopsis of the weather-related damage affecting Maricopa County during the month of March 1995. Maricopa County experienced a potentially serious flooding situation due to anticipated rainfall on the watersheds; however, the storm events and rainfall amounts fell short of causing any serious problems.

Two major storm events passed through the County. The first was on the 5th and 6th of March, followed a week later with a second storm event beginning on Friday, March 10th and extending through early Sunday, March 12th. The first storm, which passed north of the Greater Phoenix Metropolitan area, had little direct effect on the Valley, with the exception of causing heavy runoff into the water storage system on the Verde watershed. With average rainfall of over an inch, Salt River Project increased water releases over the Granite Reef Diversionary Dam which peaked at 68,993 cfs at 11:00 p.m. on March 6th.

The second storm of the month, which passed through and hammered California, brought lower temperatures, rain and wind. Flash flood watches were in effect Friday and Saturday as rainfall anticipated in excess of more than an inch and a half was expected on the Salt and Verde watersheds. In anticipation of the increased runoff into the already near capacity storage system, Salt River Project projected possible water release amounts over 100,000 cfs. The rainfall was less than expected, with the main storms passing south of the watersheds, thus precluding the need to release larger amounts of water which could have caused flood damage. The maximum release rate during the storm was 18,023 cfs at 6:00 p.m. on March 11th.

No damage was reported in Maricopa County due to the storms of March 1995. The river crossings which were closed by the previous water releases over the Granite Reef Diversionary Dam, as reported in the March 8th weather report, remain closed to date.

Sincerely,

Dennis A. Cvancara
Emergency Services Planner

DC/mr

cc: David Smith, County Administrative Officer
Louis A. Schmitt, P.E., ACA Infrastructure Operations
Jill Herberg-Kusy, Acting Director, Planning and
Infrastructure Development Department
Jim Phipps, Flood Control District

October 3, 1994

Mr. Steve Sipple
National Weather Service
P.O. Box 52025, NWS PAB 500
Phoenix, Arizona 85072-2025

Dear Mr. Sipple:

The following report is a synopsis of the weather-related damage affecting Maricopa County during the months of August and September 1994. Maricopa County was skirted by numerous severe weather storms during the month of August generating thunderstorms, heavy showers and flash flooding in the Tucson and Flagstaff areas.

On August 11, Maricopa County received over 7,000 lightning strikes during the evening hours, creating some spectacular visual effects. That same evening, thunderstorm winds in excess of 75 mph downed large trees, shattered windows, ripped off roof tiles and blew off chimneys in the northeast Scottsdale area.

- At 11:30 p.m., about 25 homes, under various levels of construction in the Sonoran Heights development in the 12600 block of East Poinsettia Drive were destroyed by a microburst. Estimated dollar loss was one-half million dollars.

On Friday, August 19th, severe thunderstorm winds in excess of 70 mph caused structural damage in the Fountain Hills area. Metal carport structures were destroyed, roofs damaged, chimneys were knocked over, street signs were blown down or twisted, trees were uprooted and the scoreboard at the high school football field was destroyed. The damage was localized to the Gunsight Drive and Saguaro Blvd and the Quail Run Apartment areas. The Chaparral City Water Company reported .53 inch of rain.

On Saturday, August 27th, a storm produced heavy rains in the Morristown area, with an estimated 2 inches of rain in a one hour period starting at 6:45. The NWS issued a severe thunderstorm warning at 4:13 p.m., followed by a flash flood warning for the area from 7:50 p.m., effective until 9:00 p.m.

During the month of September, storm damage to Maricopa County was severe, causing at least one death, several injuries and heavy property damage.

On Friday, September 2, a monsoon storm entered the Valley at approximately 6:30 p.m., killed a Tempe man, knocked out power and dumped over an inch of rain in a one hour period.

- At 7:00 p.m., a 22 year-old Tempe man was killed by a lightning strike at a business in the 600 block of South River Street near University Drive and Price

Road. He was struck and killed instantly in an open parking lot when he went outside to move his car closer to the building.

- At about 7:30 p.m., over 100,000 Arizona Public Service (APS) and 29,000 Salt River Project (SRP) customers lost electrical power as reported winds of 60-65 mph knocked down power poles and trees, affecting electrical distribution. Sixty five power poles near Sossaman Road and Hunt Highway and 50 power poles near Seventh Avenue and Baseline were knocked down. APS lost service in the central corridor from downtown to Northern Avenue and from Seventh Avenue to 24th Street. SRP lost electrical service from Queen Creek to northeast Phoenix. About 5,000 SRP customers were still without power the following evening.
- Street flooding blew manhole covers out of their slots along Seventh Avenue from McDowell to Bethany Home Roads, trapping vehicles.
- Sky Harbor International Airport was forced to delay about 80 flights for about an hour as the storm affected both inbound and outbound service.
- Large trees blew down and blocked traffic at 44th Street and Indian School Road and at 44th Street and Campbell Avenue. Street lights were out along these heavily traveled stretches, disrupting traffic.
- A roof and an air conditioning unit of a beauty shop were removed and deposited in the middle of 15th Avenue and Indian School Road in Phoenix.

On Sunday, September 5th, a second storm system entered the Valley, triggering three lightning-caused house fires, causing some street flooding and generating a tornado.

- SRP reported 3000 homes without power in the Scottsdale and Glendale areas. They also reported that 120 homes from the Friday storm were still without power. APS initially reported 10,000 outages in the Scottsdale, Cave Creek and Carefree areas but had restored power to all but 1500 by later that evening.
- The Rural/Metro Fire Department reported three homes in Litchfield Park received minor damage from lightning strikes.
- The National Weather Service issued a severe thunderstorm warning to caution people to watch for destructive hail, lightning and heavy rain.
- The NWS reported microbursts in Tempe and Sun Lakes.

severe weather associated with the end of the monsoon season.

Sincerely,

Robert H. Bishop
Director

DC/mr

cc: Barbra Cooper, Interim County Administrative Officer
Louis A. Schmitt, P.E., ACA, Infrastructure Operations
Tom Buick, Director, Planning and Infrastructure Development
Department
Jim Phipps, Flood Control District

f:\nws\sep94

Letha Wilcox - EmerMgmt

From: Laura Fritschi - MCDOT
To: Letha Wilcox - EmerMgmt
Subject: FW: ROAD CLOSURE
Date: Thursday, May 04, 1995 2:33PM

From: Lettie Lopez - MCDOT
To: Jim Gardner - MCDOT; Thomas Buick - MCDOT; EOC1 Situation Room - EmerMgmt; EOC2 Situation Room - EmerMgmt; EOC3 Situation Room - EmerMgmt; All Operations MS-Mail Users; All Traffic MS-Mail Users
Subject: RE: ROAD CLOSURE
Date: Thursday, May 04, 1995 2:02PM

From: Lettie Lopez - MCDOT
To: Jim Gardner - MCDOT; Thomas Buick - MCDOT; EOC1 Situation Room - EmerMgmt; EOC2 Situation Room - EmerMgmt; EOC3 Situation Room - EmerMgmt; All Operations MS-Mail Users; All Traffic MS-Mail Users
Subject: RE: ROAD CLOSURE
Date: Thursday, May 04, 1995 1:46PM

From: Lettie Lopez - MCDOT
To: Jim Gardner - MCDOT; Thomas Buick - MCDOT; EOC1 Situation Room - EmerMgmt; EOC2 Situation Room - EmerMgmt; EOC3 Situation Room - EmerMgmt; All Operations MS-Mail Users; All Traffic MS-Mail Users
Subject: ROAD CLOSURE
Date: Wednesday, May 04, 1995 1:43 PM

(4) Flood Event As Of March, 6,1995

Road Closure Listing: If You Have Any Questions Call Alex Romero x8664 or Lettie Lopez x6063.

Latest Update: May 4, 1995 Time: 1:43 PM

Closure:
Location: McKellips Road at Salt River
Crew Number: 542 and 549
Date Closed: 02/14/95
Time Closed: 0510
Reason: River Running

Field Checked:	Date:	Time:	Crew#:	Work Done At Location:
	03/21/95	1300	524	Reset Barr. Remains Closed
	03/24/95	0830	524	Chk Barr & Signs Remains Closed
	04/07/95	1323	524	Chk Barr & Signs Remains Closed
	04/10/95	1150	546	Chk Barr & Signs Remains Closed

04/13/95 1252 546 Chk Barr & Signs Remains Closed

Reopened: 1343
Crew Number: 549
Date Opened: 04/14/95

Closure:
Location: 67th Ave at Salt River
Crew Number: 523 and 548
Date Closed: 02/15/95
Time Closed: 0330
Reason: River Running

Field Checked:	Date:	Time:	Crew#:	Work Done At Location:
	03/20/95	0900	542	Chk Barr & Signs Remains Closed
	03/30/95	1340	548	Chk Barr & Signs Remains Closed
	04/07/95	1057	546	Chk Barr & Signs Remains Closed
	04/10/95	0950	543	Chk Barr & Signs Remains Closed
	04/11/95	1028	543	Chk Barr & Signs Remains Closed
	04/13/95	1100	543	Chk Barr & Signs Remains Closed
	04/18/95	0733	546	Chk Barr & Signs Remains Closed
	04/19/95	0955	546	Chk Barr & Signs Remains Closed
	04/20/95	1042	546	Chk Barr & Signs Remains Closed
	04/21/95	1431	543	Chk Barr & Signs Remains Closed
	04/26/95	1435	5409	Chk Barr & Signs Remains Closed
	04/28/95	1100	543	Chk Barr & Signs Remains Closed
	05/01/95	0850	546	Chk Barr & Signs Remains Closed
	05/02/95	1033	548	Chk Barr & Signs Remains Closed

Reopened: 1322
Crew Number: 5409
Date Opened: 05/04/95

Closure:
Location: Airport Road and Gila
Crew Number:
Date Closed:
Time Closed:
Reason: River Running

Field Checked:	Date	Time	Crew#	Work Done At Location
	04/27/95	1109	546	Chk Barr & Signs Remains Closed
	05/01/95	0759	543	Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened:

Closure:
 Location: 91st Ave and Salt River
 Crew Number: 548
 Date Closed: 02/15/95
 Time Closed: 0700
 Reason: River Running

Field Checked: Date:	Time:	Crew#:	Work Done At Location:
03/20/95	0840	542	Chk Barr & Signs Remains Closed
03/30/95	1140	548	Chk Barr & Signs Remains Closed
03/31/95	1256	548	Chk Barr & Signs Remains Closed
04/03/95	1450	546	Chk Barr & Signs Remains Closed
04/06/95	1159	546	Chk Barr & Signs Remains Closed
04/10/95	1028	543	Chk Barr & Signs Remains Closed
04/13/95	1020	543	Chk Barr & Signs Remains Closed
04/13/95	1422	546	Chk Barr & Signs Remains Closed
04/18/95	0756	546	Chk Barr & Signs Remains Closed
04/19/95	0958	546	Chk Barr & Signs Remains Closed
04/20/95	0222	546	Chk Barr & Signs Remains Closed
04/24/95	0806	546	Chk Barr & Signs Remains Closed
04/25/95	0853	546	Chk Barr & Signs Remains Closed
04/27/95	0716	546	Chk Barr & Signs Remains Closed
04/28/95	1036	543	Chk Barr & Signs Remains Closed
05/01/95	0900	546	Chk Barr & Signs Remains Closed
05/02/95	1108	548	Chk Barr & Signs Remains Closed

Reopened:
 Crew Number:
 Date Opened:

Closure:
 Location: 115 Ave and Gila
 Crew Number: 546
 Date Closed:
 Time Closed:
 Reason: River Running

Field Checked: Date	Time	Crew #	Work Done At Location
04/26/95	1435	5409	Chk Barr & Signs Remains Closed
04/27/95	1105	546	Chk Barr & Signs Remains Closed
05/01/95	1105	546	Chk Barr & Signs Remains Closed

Reopened: 1540
 Crew Numbe: 5403
 Date Opened: 05/02/95

Closure:
 Location: 363 Ave and Gila
 Crew Number: 544
 Date Closed:

Time Closed:
Reason: River Running

Field Checked:
Date: 04/27/95 Time: 1118 Crew #: 544 Work Done On Location: Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened:

Closure:
Location: Deer Valley Road Between 75th Ave and 83rd Ave
Crew Number: 523
Date Closed: 03/07/95
Time Closed: 1300
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:
03/07/95 1400 523 Reinstalled Barr, Remains Closed
03/08/95 1000 542/548 Reset 10 T-2 Barr and Signs Remains Closed
03/09/95 0740 523/542 Reset Barr & Signs Remains Closed
03/10/95 0800 523 Reset Barr & Signs Remains Closed
03/10/95 1630 548 Reset Barr & Signs Remains Closed
03/12/95 1500 542 Reset Barr Remains Closed
03/13/95 1200 548 Reset Barr & Signs Remains Closed
03/13/95 1430 542 Reset Barr & Signs Remains Closed
03/14/95 1400 548/523 Reset Barr & Signs Remains Closed
03/15/95 0815 523 Reset Barr Remains Closed
03/16/95 1200 523 Reset Barr & Signs Remains Closed
03/17/95 1300 548 Reset Barr & Signs Remains Closed
03/18/95 1630 543 Reset Barr & Flashers Remains Closed
03/19/95 1735 543 Reset Signs, Barr, & Flashers Remains Closed
03/20/95 0700 542 Reset Barr, Remains Closed
03/20/95 1300 542 Removed Signs and Barr has been re-opened for traffic.

Reopened: 1300
Crew Number: 542
Date Opened: 03/20/95

Closure:
Location: Baseline at Hassayampa
Crew Number: 5409
Date Closed: 03/06/95
Time Closed:
Reason: River Running
Field Checked:
Date: Time: Crew#: Work Done At Location:

Reopened: 1500
Crew Number: 544
Date Opened: 03/09/95

Closure:
Location: El Mirage Between Southern and Indian Springs
Crew Number: 531B
Date Closed: 02/15/95
Time Closed: 0943
Reason: River Running

Field Checked: Date:	Time:	Crew#:	Work Done At Location:
03/20/95	0750	542	Chk Barr & Signs Remains Closed
03/29/95	1430	548	Chk Barr & Signs Remains Closed
03/31/95	1414	548	Chk Barr & Signs Remains Closed
04/03/95	1255	546	Chk Barr & Signs Remains Closed
04/07/95	1337	548	Chk Barr & Signs Remains Closed
04/11/95	1121	546	Chk Barr & Signs Remains Closed
04/12/95	1143	546	Chk Barr & Signs Remains Closed
04/13/95	0839	543	Chk Barr & Signs Remains Closed
04/18/95	0822	546	Chk Barr & Signs Remains Closed
04/27/95	0822	546	Chk Barr & Signs Remains Closed
05/01/95	1201	546	Chk Barr & Signs Remains Closed
05/02/95	1237	548	Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened:

Closure:
Location: Fornes Rd and US 80
Crew Number: 544
Date Closed: 04/10/95
Time Closed:
Reason: Permanent Closure

Field Checked Date	Time	Crew #	Work Dne At Location
04/19/95	1445	544	Chk Barr & Signs Remains Closed
04/21/95	1023	543	Chk Barr & Signs Remains Closed
04/27/95	1118	544	Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened

Closure

Location: 115th Avenue Between Baseline and Southern

Crew Number: 531B
Date Closed: 02/15/95
Time Closed: 1012
Reason: River Running

Field Checked:

Date:	Time:	Crew#:	Work Done At Location:
02/16/95	1121	548	Chk Barr & Signs Remains Closed
02/17/95	1020	543	Chk Barr & Signs Remains Closed
02/27/95	1606	542	Chk Barr & Signs Remains Closed
03/10/95	1008	548	Chk Barr & Signs Remains Closed
03/13/95	1032	548	Chk Barr & Signs Remains Closed
03/14/95	1231	543	Chk Barr & Signs Remains Closed
03/15/95	1400	543	Chk Barr & Signs Remains Closed
03/22/95	1401	543	Chk Barr & Signs Remains Closed
03/30/95	1104	548	Chk Barr & Signs Remains Closed
03/31/95	1414	548	Chk Barr & Signs Remains Closed
04/03/95	1335	546	Chk Barr & Signs Remains Closed
04/05/95	1320	546	Chk Barr & Signs Remains Closed
04/07/95	1342	548	Chk Barr & Signs Remains Closed
04/11/95	1146	546	Chk Barr & Signs Remains Closed
04/12/95	1206	546	Chk Barr & Signs Remains Closed
04/13/95	0912	546	Chk Barr & Signs Remains Closed
04/18/95	0932	546	Chk Barr & Signs Remains Closed
04/20/95	1200	546	Chk Barr & Signs Remains Closed
04/21/95	1347	543	Chk Barr & Signs Remains Closed
04/26/95	1435	5409	Chk Barr & Signs Remains Closed
04/27/95	0750	546	Chk Barr & Signs Remains Closed
04/28/95	0942	543	Chk Barr & Signs Remains Closed

Reopened: 1356
Crew Number: 543
Date Opened: 05/04/95

Closure:
Location: Bartlette Dam At Cave Creek
Crew Number: 549
Date Closed: 03/06/95
Time Closed: 1018
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:

Reopened: 1200
Crew Number: 523
Date Opened: 03/08/95

Closure:
Location: I 17 Frontage Road and Old Stage Coach at New River Wash

Crew Number: 549
Date Closed: 03/06/95
Time Closed: 1019
Reason: River Running

Field Checked:
Date: 03/13/95 Time: 1400 Crew#: 542 Work Done At Location: Chk Barr & Signs Remains Closed

Reopened: 1042
Crew Number: 524
Date Opened: 3/17/95

Closure:
Location: Patton Road At Hassayampa River (Closed on East Side)
Crew Number: 542
Date Closed: 03/06/95
Time Closed: 0859
Reason: River Running

Field Checked:
Date: 03/13/95 Time: 1319 Crew#: 548 Work Done At Location: Reset Signs & Barr Remains Closed

Reopened: 1505
Crew Number: 549
Date Opened: 03/14/95

Closure:
Location: Lower Buckeye and Agua Fria
Crew Number:
Date Closed: 03/06/95
Time Closed:
Reason: Closed by contractor due to construction

Field Checked:
Date: 05/01/95 Time: 0946 Crew#: 3300 Work Done At Location: Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened:

Closure:
Location: Gates Road and Hassayampa River
Crew Number: 542
Date Closed: 03/06/95
Time Closed: 1300
Reason: Flooding

Field Checked:
Date: Time: Crew#: Work Done At Location:
03/21/95 1330 549 Chk Barr & Signs Remains Closed
04/03/95 1135 542 Chk Barr & Signs Rremains Closed
04/14/95 1010 549 Opened to local traffic only

Reopened: 1300
Crew Number: 549
Date Opened: 04/18/95

Closure:
Location: Rincon Road North of SR 93
Crew Number: 3408
Date Closed: 02/15/95
Time Closed: 0837
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:
03/21/95 1406 549 Chk Barr & Signs Remains Closed
02/22/95 1316 542 Road Opened

Reopened:
Crew Number: 1316 542
Date Opened: 02/22/95

Closure:
Location: 339th Avenue and Indian School
Crew Number: 5403
Date Closed: 02/15/95
Time Closed: 1031
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:
03/13/95 1150 544 Chk Barr & Signs Remains Closed

Reopened: 1410
Crew Number: 548
Date Opened: 03/16/95

Closure:
Location: Pierpoint at the Gila River
Crew Number: 544
Date Closed: 02/15/95
Time Closed: 1314
Reason:

Field Checked:

Date:	Time:	Crew#:	Work Done At Location:
03/21/95	1425	544	Chk Barr & Signs Remains Closed
03/22/95	1454	544	Chk Barr & Signs Remains Closed
03/23/95	1454	544	Chk Barr & Signs Remains Closed
03/31/95	1232	543	Chk Barr & Signs Remains Closed
04/03/95	1430	544	Chk Barr & Signs Remains Closed
04/11/95	1423	544	Chk Barr & Signs Remains Closed
04/18/95	1346	544	Chk Barr & Signs Remains Closed
04/27/95	1118	544	Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened:

Closure:
Location: POCO Dinero at Painted Rock Dam
Crew Number: 548
Date Closed: 02/17/95
Time Closed: 2000
Reason: River Running

Field Checked:	Date:	Time:	Crew#:	Work Done At Location:
	02/24/95	0839	544	Chk Barr & Signs Remains Closed
	02/28/95	1345	544	Chk Barr & Signs Remains Closed
	03/08/95` 1233	544	544	Chk Barr & Signs Remains Closed
	3/20/95	1410	544	Chk Barr & Signs Remains Closed
	03/23/95	1354	544	Chk Barr & Signs Remains Closed
	03/22/95	1454	544	Chk Barr & Signs Remains Closed
	03/24/95	0728	541	Chk Barr & Signs Remains Closed
	03/24/95	0140	543	Chk Barr & Signs Remains Closed
	04/18/95	0935	544	Chk Barr & Signs Remains Closed
	04/27/95	1118	544	Chk Barr & Signs Remains Closed
	05/01/95	1327	544	Chk Barr & Signs Remains Closed

Reopened:
Crew Number:
Date Opened:

Closure:
Location: Rocky Point Road at Gila
Crew Number: 548
Date Closed: 02/17/95
Time Closed: 2045
Reason: River Running

Field Checked:	Date:	Time:	Crew#:	Work Done At Location:
	03/06/95	0000	000	Chk Barr & Signs Remains Closed
	04/18/95	0935	544	Chk Barr & Signs Remains Closed
	04/27/95	1118	544	Chk Barr & Signs Remains Closed

05/01/95 1327 544 Chk Barr & Signs Remains Closed
Reopened:
Crew Number:
Date Opened:

Closure:
Location: Dove Valley and 211th Avenue
Crew Number: 549
Date Closed: 03/06/95
Time Closed: 1013
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:

Reopened: 1400
Crew Number: 549
Date Opened: 03/06/95

Closure:
Location: Cave Creek and Tonto Hills
Crew Number: 549
Date Closed: 03/06/95
Time Closed: 1217
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:

Reopened: 1130
Crew Number: 523
Date Opened: 03/08/95

Closure:
Location: Salome/Tonopah at the Hassayampa River
Crew Number: 5409
Date Closed: 03/06/95
Time Closed: 1100
Reason: River Running

Field Checked:
Date: Time: Crew#: Work Done At Location:
03/13/95 1140 544 Chk Signs & Barr Remains Closed

Reopened: 1420
Crew Number: 548
Date Opened: 03/16/95

Closure:
Location: New River and Kelly Road
Crew Number: 549
Date Closed: 03/06/95
Time Closed: 1058
Reason: River Running

Field Checked:

Date:	Time:	Crew#:	Work Done At Location:
02/03/95	1200	523	Chk Barr & Signs Remains Closed
02/08/95	1211	523	Chk Barr & Signs Remains Closed
02/16/95	1210	523	Chk Barr & Signs Remains Closed
03/06/95	1058	549	Chk Barr & Signs Remains Closed
03/15/95	0715	523	Chk Barr & Signs Remains Closed
03/17/95	0940	524	Chk Barr & Signs Remains Closed
03/21/95	0730	523	Chk Barr & Signs Remains Closed
03/27/95	1245	549	Chk Barr & Signs Remains Closed
03/29/95	0715	523	Chk Barr & Signs Remains Closed
04/03/95	1020	549	Chk Barr & Signs Remains Closed
04/04/95	1056	523	Chk Barr & Signs Remains Closed
04/06/95	1100	523	Chk Barr & Signs Remains Closed
04/07/95	0930	523	Chk Barr & Signs Remains Closed
04/10/95	0745	546	Chk Barr & Signs Remains Closed

Reopened: 0900
Crew Number: 546
Date Opened: 04/11/95

MARICOPA COUNTY DEPARTMENT OF EMERGENCY MANAGEMENT
2035 North 52nd Street, Phoenix, AZ 85008
(602)273-1411 FAX (602)275-1638

MEMO TO: David R. Smith, Chief Administrative Officer
FROM: Robert H. Bishop, Director, Department of Emergency Management
SUBJECT: FEBRUARY 15-16 FLOOD EVENT SITUATION REPORT
DATE: February 17, 1995

The following memo is a situation report and an update on the flood event experienced by Maricopa County during the last 48 hours.

A warm tropical storm from the Pacific and a cold front pushing from the north combined over Arizona to trigger heavy rains and subsequent significant flows and flooding in rivers and washes throughout central Arizona Tuesday night and Wednesday morning. The National Weather Service issued flash flood watches and warnings throughout the period in addition to snow advisories. As a result of heavy rains on the Verde watershed, flows on the mainstream rivers such as the Verde, Tonto and Tangle Creek were very high with a record flow on the Verde River which peaked at 112,000 cubic feet per second (cfs).

At the February 14 Salt River Project (SRP) briefing, water releases were increased to 10,000 cfs to maintain a safe storage level in the Verde River system which includes Horseshoe and Bartlett Dams. However, due to heavy rains which averaged 2 inches on the watershed, and the increasing flows of Tuesday night and Wednesday morning, SRP notified the Department of Emergency Management that they will have to increase releases from the dams. The after hours duty officer was informed that the combined releases, which pass through the Granite Reef Diversion Dam and into the Salt River, would be increased to at least 85,000 cfs. The County Emergency Operations Center was activated for 24-hour operations with personnel from the Department of Emergency Management, the Maricopa County Sheriff's Office, Flood Control District and the Maricopa County Department of Transportation. Flood Control District also activated their alert room for 24-hour operations. The Central Chapter of the American Red Cross was placed on standby status.

By 9:00 a.m., February 15th, a release into the Salt River of 47,540 was reported by SRP. The release rate increased to 92,220 cfs at 5:00 p.m., and a final, peak of 98,550 was reported at 9:00 p.m.

Road closures were numerous with grade crossings across the Salt River all closed by MCDOT barricade crews. The only main bridge over the Salt River closed was the

Gilbert Road Bridge which is rated at 80,000 cfs. Flood Control District crews monitored levees and canals, and reported through their alert room to the County EOC.

Of greatest flooding concern are three low lying areas on the Salt River 8-10 hours flow time from Granite Reef Dam: Holly Acres at 115th Ave, Beloit Road to the Salt River west of Airport Road, and 67th Avenue west to 75th Avenue south of the Salt River to Southern. During the 1993 flood event, these areas were evacuated as a precautionary measure. The EOC responded to continual requests by concerned citizens on the status of the water releases and their concern about whether evacuations will again be necessary.

At approximately 3:00 a.m. on February 16th, the peak water level was measured by Flood Control road crews at the Holly Acres levee at 11.5 feet. This measurement, combined with a 3:00 a.m. decreased release rate at Granite Reef of 65,000 cfs, after a sustained average of 85,000 cfs for the past 6 hours, would indicate that the main flood event danger has passed. Releases from Granite Reef will be further decreased to about 30,000 cfs. A release rate of 3000 to 5000 cfs will be maintained for several weeks.

The County EOC returned to standby status on February 16th and the after hours duty officer instructed to reactivate the EOC if necessary.

cc: Mr. Lou Schmitt, Associate County Manager, Infrastructure Operations
Mr. Tom Buick, Director Planning and Development Department

MEMO: 2/17/95 3:00 p. m.

Dan Phillips from SRP reported the following water release schedule for the next couple weeks, assuming no more storms come through.

BARTLETT DAM:

- 2/18/95 Release rate will be cut to 5000 cfs.
- 2/21/95 Release rate will be cut to zero.
- 2/28/95 Release rate will be adjusted to equal the inflow to Horseshoe Lake (probably about 1000 cfs)

STEWART MOUNTAIN DAM:

- 2/17/95 Release rate will be 5000 - 6000 cfs.
- 2/22/95 Release rate will be cut back to equal water orders.
- 2/25/95 Release rate will be increased to 5000 cfs.

The riverbed below Granite Reef will be dry Thursday and Friday, February 23-24, so that SRP can do some repairs at Granite Reef.

FLOODING SITUATION

3/6/95, 3:30 p. m.

The Salt River is expected to peak at about 75,000 cfs. That amount should be going over Granite Reef Dam by about 7:00 to 8:00 tonight. There is a possibility the flow rate could go over 100,000 cfs some time during the night, but that doesn't look too likely at this point. It takes about 7 to 8 hours for the release rate at Granite Reef to make its way down to the area around Holly Acres.

MCSO and MCDOT (traffic ops) will both have representatives out here with you tonight. Flood Control won't have anybody here and their alert room won't be open, but you can get information about flow rates at the Priest Drive and Estrella Parkway bridges, etc. from Tom Donaldson on his home phone (970-3323 or cellular 809-4384). If SRP changes its prediction and says the flow rate will be going above 75,000, call Tom at home and he will reevaluate whether to open the alert room.

Release rate at Coolidge Dam on the Gila River is 1500 cfs - no problem. There is no release from New Waddell Dam.

If it looks like there is a possibility that we'll be doing any evacuations, call Dennis Raines at home (864-0046).

SRP's prediction for the rest of the week is about 50,000 cfs Wednesday, gradually decreasing down to about 20,000 cfs by Friday. Another storm system is due in Friday.

NEWS RELEASE #2

ARIZONA DIVISION OF EMERGENCY MANAGEMENT**5636 East McDowell Road****Phoenix, Arizona 85008****(602) 244-0504****FOR IMMEDIATE RELEASE****CONTACT: BARBARA TAYLOR or****LINDA MASON****231-6279****7 COUNTIES & 2 CITIES IN ARIZONA****DECLARE FLOOD EMERGENCY**

PHOENIX, ARIZONA (February 17, 1995) -- On February 16, 1995 Governor Fife Symington declared that a state of emergency exists within the State of Arizona. The declaration was a result of a major series of intensive storms, beginning on November 11, 1994. These storms have resulted in heavy rainfall that has caused widespread flooding to both public and private property within the state. Five Arizona counties to include Yavapai, Coconino, Yuma, Gila, Maricopa, and the Towns of Sedona and Camp Verde have declared flood emergencies and requested state assistance as a result of the current storms. Other counties may declare as conditions warrant.

The Governor's declaration will allow state resources to be utilized to assist local jurisdictions in their emergency response operations. Emergency monies from the General Fund have been made available to the Arizona Division of Emergency Management, to be expended toward public health and safety operations.

The declaration also provides for the activation of the National Guard to support state and local emergency management activities. Additional funding from the State legislature may be necessary to support response activities.

The Arizona National Guard has UH-1H "Huey" helicopters flying missions to assist officials from state and federal emergency management agencies in surveying the damage caused by recent heavy rains and flooding. Other Guard units are ready to provide ground, air, or communications support.

The Arizona Division of Emergency Management, a part of the Department of Emergency and Military Affairs for the State of Arizona, is under the direction of Michael P. Austin and will take the lead in providing direction and coordination of state emergency response operations. The Division is responsible for maintaining disaster management programs in the state by developing mitigation, preparedness, response and recovery activities. State disaster response activities will be coordinated through the State Emergency Operations Center (SEOC), located at 5636 East McDowell Road, in Phoenix, Arizona.



P.O. BOX 52025
PHOENIX, ARIZONA 85072-2025

NEWS RELEASE

MEDIA RELATIONS: (602) 236-2500

MEDIA ALERT

SRP Media Relations:
236-2500, 236-2712

FOR IMMEDIATE RELEASE

February 15, 1995

Water Flows Today to Jump to 80,000 Cubic Feet Per Second

Heavy rains of more than 5 inches in some areas of northern Arizona and melting snowpack have prompted Salt River Project today to declare a Reservoir Release Emergency.

Water flows over Granite Reef Diversion Dam into the Salt River bed will increase from 20,000 cubic feet per second (cfs) this morning to approximately 80,000 cfs by midday, with the potential of further increases. One cubic foot of water is equal to approximately 7.7 gallons.

SRP water experts staffing the 24-hour Emergency Operations Center (EOC) at the Project Administration Building in Tempe continue to monitor watershed conditions. They are closely watching water inflows on the Verde River, which has received the bulk of the precipitation in the last 48 hours.

-MORE-

#0209

Most of the water flowing into the Salt River bed is being passed through Horseshoe and Bartlett dams on the Verde River. The reservoirs on the Salt River have not experienced the same level of water inflow as the Verde River reservoirs because of the storm's northerly track.

Water releases are made in response to the amount of precipitation that falls across SRP's 13,000-square-mile watershed. When the lakes are full and the watershed is hit by heavy storms, SRP must release water from its six dams on the Salt and Verde rivers.

People should not enter the Salt River for any reason. High water-flow rates pose a potential danger for anyone entering the river — even experienced water recreationists. When water is flowing in the Salt River through the Phoenix metropolitan area, the river is murky, turbulent and treacherous. Visibility can be reduced.

East Valley motorists should expect detours at unbridged Salt River crossings such as McKellips Road for several weeks.

The ongoing dam-modification construction at Bartlett Dam on the Verde River and Roosevelt Dam on the Salt River has limited SRP's ability to store water. Currently, an auxiliary spillway is under construction at Bartlett; the dam will later be increased by 21.5 feet. Roosevelt Dam will be raised by 77 feet when construction is completed by early 1996.

NOTE: Inquiries about water releases today should be made through SRP's Emergency Operations Center at 236-2712. That phone number is for members of the media only.

Office of the
County Manager
Roy R. Pederson



MEMO TO: Board of Supervisors
FROM: Roy Pederson
DATE: February 22, 1993
SUBJECT: MARICOPA COUNTY INVOLVEMENT IN THE JANUARY FLOODS

Maricopa County was significantly involved in protecting our citizens from the effects of flooding during the month of January. County employees performed an outstanding job. They expended over 6500 hours of additional work during the emergency. I would like to take the opportunity to acknowledge their outstanding and often unsung efforts. The attached memo discusses our involvement.

The following gives some of the highlights of the memo.

- The peak flow of 124,000 cubic feet per second is estimated to be about a 25-year flood.
- The Departments of Emergency Management, Environmental Management, and Transportation, as well as the Flood Control District and the Sheriff's Office staffed the 24-hour Emergency Operations Center. The Center responded to over 2,000 telephone inquiries.
- Two Maricopa County citizens lost their lives as a result of the flooding.
- Over 200 families throughout the county were evacuated from their homes because of the flooding.
- Considerable property damage occurred throughout the county. On January 19, 1993, Maricopa County was declared eligible for Federal Disaster Assistance.
- All county-owned flood control facilities functioned as designed, and no major failures occurred.

rh

c: Ted Williams
Lou Schmitt
Joe Arapio

Tom Rawles
District 1

James D. Bruner
District 2

Betsey Bayless
District 3

Ed King
District 4

Mary Rose Garrido Wilcox
District 5



Storm Report

*for the events occurring
January 5 through 7,
January 8 through 10, and
January 15 through 18, 1993*

The heavy rainfall of January 1993 was the most significant the State of Arizona has experienced since the flooding of 1978 and 1980. While 1978 and 1988 floods left much of the Valley of the Sun stranded by road and bridge closures, this time the water was, for the most part, contained and controlled by the structures built to do so. The numerous bridges and flood control facilities constructed since 1980 all functioned as designed. Table 1 lists the major bridges and roads constructed since 1980 that played a role in the January floods. This summary provides an overview of the County's response to the storm event as well as the damages incurred by the flooding. A map has been included to show the effected areas.

Weather Conditions

Three separate tropical storms, originating in the Pacific Ocean, hit the State of Arizona between January 5 and January 18, 1993. The initial storm produced an average of three inches of rain on the Verde and Salt River watersheds. The excessive rain, coupled with saturated soil, rising freezing levels and melting snow, caused stream levels to exceed bank capacities. Flood watches, warnings, and advisories were issued throughout the period by the National Weather Service, disseminated by the Department of Emergency Management and broadcast throughout the county by the media.

The cold front moving from the north pushed the warm tropical flow further south of the Verde watershed, increasing the snow pack to the north and increasing the rainfall in the Tucson area. The worst case scenario of rain on snow pack did not occur, and the potential for flooding was decreased dramatically.

River Flows

While precipitation is difficult to predict, predicting flows in rivers is even more difficult. The characteristics (rain, rain on snow, saturated soils, etc.) of the three storms made predicting the river flows far more complicated than usual. One prediction had the river flowing almost twice as much as it actually did.

On December 28, 1992, the Salt River at Granite Reef began to flow at 4,000 cubic feet per second (cfs), a cubic foot per second of flowing water equals approximately 650,000 gallons of water per day. Flow continued at this rate until January 7 when it rapidly rose to 124,000 cfs on January 8. The high flows of over 100,000 cfs continued for almost three days but were curtailed to around 50,000 cfs from January 10 through January 17. On January 18, the river flows rose rapidly to 80,000 cfs, and continued at that level for one day, gradually dropping to 15,000 cfs on January 31.

The peak flow of 124,000 cfs is estimated to be about one half of the 100 year flood. Hydrologists estimate that the River's January peak flow was about a 25-year flood. Throughout January, the Salt River Project coordinated the releases from Granite Reef Dam with releases from Coolidge Dam and intervening drainage to minimize flood damages.

The storms drenched the eastern part of the State causing high flows into the San Carlos Reservoir (Coolidge Dam). It takes several days for the flow from Coolidge Dam to reach the Salt River near 115th Avenue.

Emergency Declarations

On January 8, the Chairman of the Board of Supervisors signed a County Emergency Declaration which was forwarded to the State. The State Declaration was signed by the Governor on the same day (effective January 5) and was then forwarded to the Federal Government. A Presidential Federal Disaster Declaration was requested and signed by President Bush on January 19.

Emergency Operations

The County activated the Emergency Operations Center (EOC) on a 24-hour basis starting January 7 in response to the continued rain, water releases, and potential flooding in the county. The EOC stood down 24-hour operations on January 16. On January 17, Salt River Project predicted that potential heavy rains could push the flows in the Salt River up to 200,000 cfs (80% of the 100-year flood) and the EOC 24-hour operation was again reactivated. The Department of Emergency Management stood down the Emergency Operations Center on January 23.

The EOC was staffed by the County Emergency Management, Environmental Quality, and Transportation Departments, as well as the Flood Control District, the Sheriff's Office, and the Central Arizona Chapter of the American Red Cross. The EOC responded to 2,000-3,000 inquiries from the public and was instrumental in supporting city and town emergency response operations by providing up-to-date, accurate and continuous information concerning the flooding.

The Sheriff's Office established a Field Command Post at 115th Avenue and Southern to assist in evacuations and returns. Sheriff's Posse resources were called out to staff the Field Task Force from January 8 through January 12 to help notify residences and businesses of evacuations and roadblocks. The Sheriff's Office Lake Patrol's three squads were placed on 12-hour shifts.

Loss of Life

Numerous successful rescues were made by the Sheriff's Office, Sheriff's Posse, Search and Rescue, and municipal and Rural/Metro fire units. Unfortunately, two deaths were reported in the county as a result of the storms. One individual fell from a horse in the Agua Fria River and drowned, and the other individual was believed to have walked into the Salt River as a suicide.

Evacuations

Of greatest concern was the Holly Acres community located at the confluence of the Gila and Salt Rivers. Holly Acres is protected from the Gila River by a Flood Control District levee (rated at 105,000 cfs). On January 8, water rose to within 18 inches of the top of the levee. Flood Control District and Department of Transportation employees reinforced the levee with 96,000 cubic yards of material and 15,000 sand bags containing 183 tons of sand.

The Sheriff's Office assisted in evacuating over 200 families on January 8. The families were allowed to return late on January 9 with appropriate cautions. Had the flows from the third storm occurred as SRP projected, these families would have been evacuated again. The Central Arizona Chapter of the American Red Cross opened a shelter at the Littleton Elementary School in Cashion, but due to lack of

participants it was later closed.

The high flows in the Salt River also forced the evacuation of six families in the Hawaiian Mobile Home Park, located west of Country Club Road in Mesa. The American Red Cross opened a shelter at the Westwood High School in support of emergency operations.

As a result of roads and bridges washing out, several families in the New River area became stranded. Some families stayed at the New River Community Center until they were able to return home. Through the outstanding efforts of the volunteers of the Arizona Search and Rescue organization, all of the 16 stranded families received support.

The rising Hassayampa River forced 15 families in a trailer park five miles south of Wickenburg to relocate. Several trailers were washed away, and the trailer park suffered extensive damages. The American Red Cross opened a shelter at the Seventh Day Adventist Church in Wickenburg, and the Wickenburg Inn opened five rooms for family disaster relief.

West Side Damages

Arlington School and six farm houses located in the Arlington area received flood damage as the floodwaters spread throughout the unchanneled areas of the west county. High water marks in these homes and the school were about 24 inches. Although damage was not extensive, considerable cleanup effort was needed to reopen the school. Four homes, two mobile homes, and three farms were damaged in the area of 227th Avenue and Beloit and had high water marks of about 24 inches.

Several farms and dairies in western Maricopa County were adversely affected by the flooding. Farms along Beloit Road west of Tuthill Road, feedlots along Beloit Road and a dairy near 195th Avenue and Highway 85 as well as several dairies at Beloit and Airport Roads, received damage including reported loss of livestock. Dead cattle and other animals have been found in the river.

The El Paso Natural Gas Company pipeline received damage during the event. Although precautionary measures were taken to prevent damage to the pipeline, it failed never the less. Two separate explosions were reported. Department of Transportation employees responded by rerouting traffic to allow El Paso Natural Gas employees to install a temporary gas line on one lane of the Old US 80 bridge. No injuries were reported, and restoration work has begun.

Business establishments receiving damage include many of the sand and gravel operations located in or near the river bed. Tanner Companies estimated their losses at \$1.4 million and a temporary loss of 75 employee jobs.

East Side Damages

A major breach in the Tri-City Landfill on the Salt River Pima-Maricopa Indian Reservation is one of the more serious environmental and health concerns. Landfill contents spilled into the Salt River and were carried downstream, littering the banks and the river bottom. Agreements are being drawn up to mitigate this recurring problem. Suggestions include sealing the old landfill and moving the location. Landfill erosion issues include determining the agency with regulatory and enforcement responsibilities for activities taking place at the landfill site and identifying if hazardous substances have leached into the river and groundwater. A series of meetings are underway to identify the agency with authority to order

an all-out river cleanup throughout the Salt and Gila River system from Granite Reef Dam to Painted Rock Dam.

Phoenix reported the Verde Water Treatment Plant received considerable damage from high water and would probably have to be shut down for several months. Fortunately, a scheduled maintenance shut-down was planned for this spring. Scheduled maintenance and damage repair will be completed simultaneously.

The Del Rio Landfill at 16th Street and the Salt River was nearly breached, but was successfully shored up. Extensive dike protection was done and no damage was reported.

Preliminary cost estimates for the City of Phoenix to repair flood damages, including mitigation efforts, is estimated at \$4.2 million. Half of the estimate is for funds to replace the embankment lost at Sky Harbor International Airport along the north bank of the Salt River below the southern runway as well as to improve the riverbank with reinforced barriers to prevent future erosion.

Thunderstorms, hail, and tornados associated with the severe weather patterns were reported on January 17. Tornados were sighted in New River, Chandler, Apache Junction, Gilbert, and Scottsdale with only Scottsdale reporting damage. Eighteen homes were damaged, four with major damage and 14 with minor damage as the tornado touched down during the noon hour.

Roads and Bridges

The dramatic media video of the new Mill Avenue Bridge construction forms falling into the Salt River focused the public's attention on bridge safety. During the entire event only the unbridged crossings and the Gilbert Bridge, the 35th Avenue Bridge, and the 51st Avenue Bridge were closed in the metropolitan area.

Bridges over the Gila River on Highway 85 and Old US 80 to Gila Bend were subject to closure on several occasions either from flooding or during the relocation and explosions of the El Paso Natural Gas pipeline. The Interstate 10 bridge over the Gila River was closed for several hours during the storm to remove tanks floating down the River. Water flows from the Gila River under the Interstate 10 bridge nearly closed the structure on a few occasions.

Roads and streets closed by the flooding throughout the county were extensive. The Department of Transportation placed more than 1,000 barricades and closed 64 roads. The Department of Emergency Management assumed the responsibility of reporting to the media and to the general public the status of road conditions throughout the area. Several hundred calls were received daily requesting road and bridge conditions throughout the event.

Total damage to Maricopa County Transportation facilities is estimated at \$1,000,000.

Dams and Reservoirs

Gillespie Dam failed when a 100-foot section from the center of the structure was washed away. Extensive work will be required to repair the dam.

Painted Rock Dam continues to provide challenges to the county as of this writing. The dam has nearly filled to its full capacity of 2.5 million acre-feet even with a continuous release of up to 12,500 cfs. Recently, the release rate was decreased to 10,000 cfs by the U. S. Army Corps of Engineers due in part to the concern for flooding in Yuma County. The road crossing over Painted Rock Dam was closed by the Corps of Engineers because of the high water, restricting residents to the use of the Agua Caliente Bridge. The Agua Caliente Bridge, three miles northeast of the Yuma County line, is officially rated at 10,000 cfs; however, some authorities feel its capacity could be as high as 20,000 cfs. No concern is expressed for the bridge to fail, but approach washouts may make the crossing unusable. If this bridge becomes unusable, approximately 40 to 50 families may be stranded north of the river. MCDOT officials have been monitoring the Agua Caliente Bridge and are drawing up contingency plans to open a higher road to the Painted Rock Dam road crossing if required. MCDOT is coordinating closely with the Corps to reopen the road crossing at the dam if it becomes necessary.

Coolidge Dam was required to release water as San Carlos Lake began to fill. By design, the dam does not have large capacity water release mechanisms and therefore must rely on the use of an uncontrolled spillway to lower water levels. The releases peaked on January 21 at approximately 33,000 cfs; until this flood, the largest release was 5,000 cfs. Ultimately, the outflow flooded several downstream towns on the Gila River before joining the Salt River at 115th Avenue. Water releases from Granite Reef Dam were stabilized at lower release levels to compensate for the increased flows from Coolidge Dam.

The Flood Control District Dams functioned as designed and helped eliminate flood damages. The following table shows the storms impact on FCD facilities.

Flood Control Dam	Percent Full	Amount of Water (Acre-feet)
Adobe Dam	6%	1,039
Cave Buttes Dam	38%	17,000
Guadalupe Flood Retention Structure	5%	15
New River Dam	34%	15,000
Rittenhouse Flood Retention Structure	9%	359
Signal Butte Flood Retention Structure	12%	166
Vineyard Flood Retention Structure	13%	573

The impoundment behind Cave Buttes Dam was the largest recorded measuring 17,000 acre-feet by 8:00 a.m. on January 11. The pool depth was 75 feet. Another significant impoundment was behind the New River Dam, which peaked at 15,000 acre-feet on January 8 at 4 p.m.

The Arizona Canal Diversion Channel, constructed to carry stormwater through metropolitan Phoenix and eventually into the Salt-Gila system, carried reported flows of 1,400 cfs on January 11.

County Resources Expended

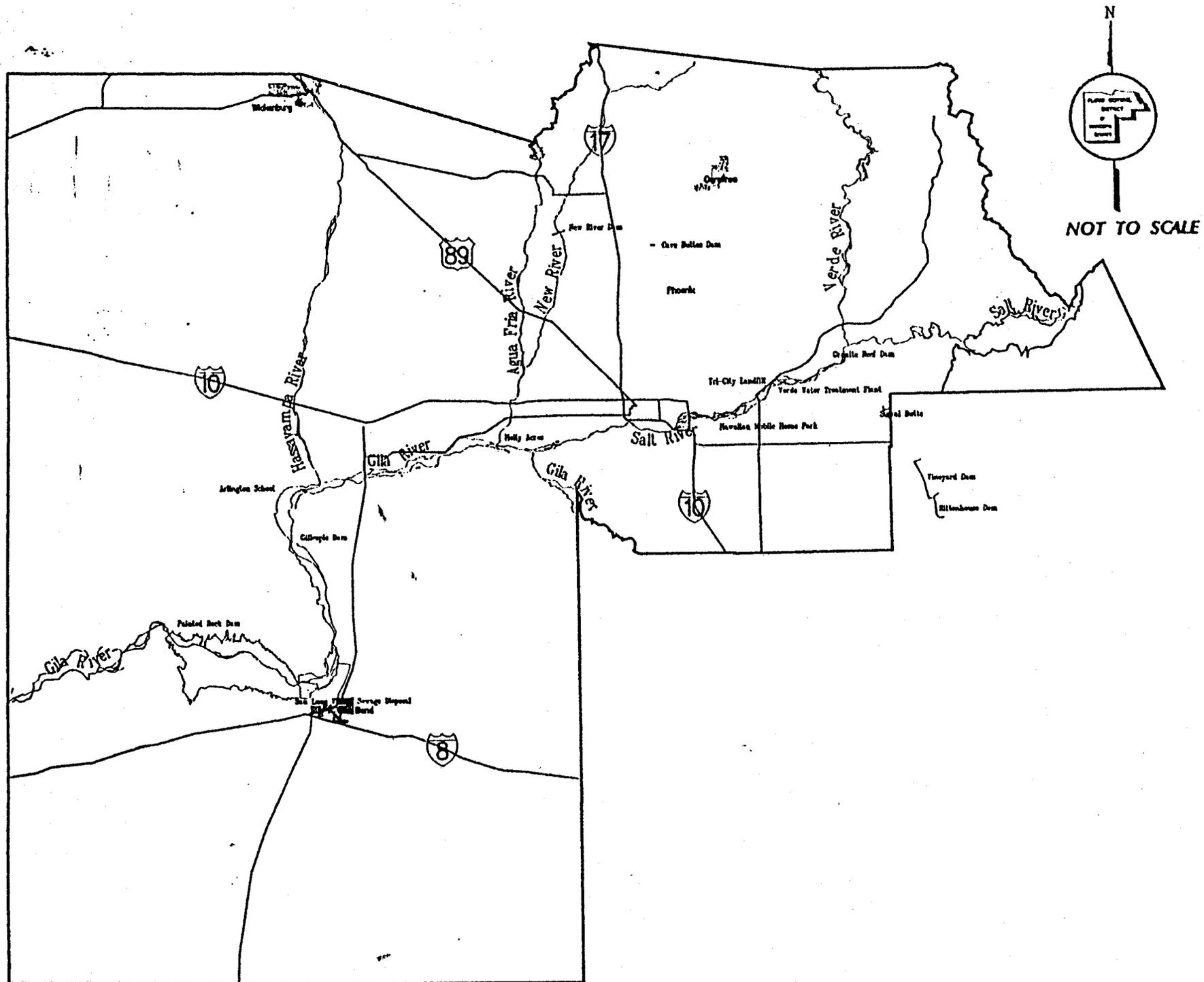
The following table lists the estimates of resources spent over and above the normal work.

Sheriff's Office	3,000 hours
Flood Control District	1,100 hours
Department of Emergency Management	600 hours
Department of Transportation	1,800 hours

Total	6,500 hours

Table 1
Major Flood Control Facilities and Bridges
Constructed In Maricopa County 1980-1992

Flood Control Facilities	Bridges
Arizona Canal Diversion Channel	Scottsdale Road - Salt River
East Maricopa Floodway	Bell Road - Agua Fria River
New River Dam	Buliard Avenue - Gila River
Adobe Dam	Hayden Road - Salt River
East Fork Cave Creek Channel and Basins	McDowell Road - Agua Fria River
Cave Buttes Dam	
91st Avenue Channel	
New River Channel	
Holly Acres Levee	
Gila River Clearing	



TO: Ted Williams, Assistant County Manager, Environmental
Quality and Community Services Agency

FROM: Robert H. Bishop, Director, Department of Emergency
Management

SUBJECT: REPORT ON FLOOD DAMAGE AND ASSESSMENT FOR BOARD OF
SUPERVISORS MEETING

DATE: January 28, 1993

This report is a summary of the flood damage events that affected Maricopa County as a result of the weekend storms of January 8-10 and the following MLK weekend of 15-18 January. These events followed unusually heavy rains which began with a series of intense tropical storms generated in the Pacific Ocean. The initial storm beginning on January 5th, the first in a series of three, produced up to 3 inches of rain in the Verde and Salt River watersheds. The excessive rain, coupled with saturated soil, rising freezing levels and melting snow, caused stream levels to exceed bank-full capacities. Flood watches, warnings and advisories were issued throughout the period by the National Weather Service, disseminated by the Department of Emergency Management and broadcast throughout the County by the media.

On January 8th, the Department of Emergency Management was advised by the Salt River Project (SRP) that water releases from Granite Reef Dam would be increased to 80-85,000 cubic feet per second (CFS) due to the heavy overnight rains. Later that day, SRP increased their release prediction to an estimated 150,000 CFS based on increased flows into the Verde River combined with heavy storm runoff of streets, roads, streams, and canals below the dams. In the final analysis the actual peak release from the Granite Reef Dam was 124,000 CFS.

In the meantime, the path of the storm also drenched the eastern part of the State causing increased flows into the Gila River above Coolidge Dam. Due to the arrival time of the runoff into San Carlos Lake and ultimately through the dam, the effects of the combined flow of the Gila River as it enters the Salt River near 115th Avenue, were not felt until several days later.

On January 8th, the Chairman of the Board of Supervisors signed a County Emergency Declaration, subsequently forwarded to the State. The State Declaration was signed by the Governor on the same day (effective January 5th) and was then forwarded to the Federal Government. A Presidential Federal Disaster Declaration was requested and signed by the President on January 19th.

The Department of Emergency Management activated the Emergency Operations Center (EOC) on a 24-hour basis starting on January 7th in response to the continued rain, water releases and potential

flooding in the County. The EOC staff, represented by Emergency Management, Environmental Quality, Flood Control District, Department of Transportation, Sheriff's Office and the Central Arizona Chapter of the American Red Cross, answered thousands of inquiries from the public in response to the events taking place. The EOC staff was instrumental in the support of City and Town response operations by providing up-to-date, accurate and continuous support in a coordinated response to the emergency.

Two deaths were reported in the County as a result of the storms. One individual fell from a horse in the Agua Fria and drowned and the other individual was believed to have walked into the water as a suicide attempt. Numerous successful rescues were made by municipal and Rural/Metro fire units and law enforcement agencies as people tried to cross flooded streams, usually as a result of ignoring road closure signs.

Several major facilities and areas were affected by the flooding. Of greatest concern, considering the potential loss of life, was the Holly Acres community in the West Valley. Located at the convergence of the Gila and Salt Rivers, the levy surrounding the community of Holly Acres is rated by the Flood Control District at 105,000 CFS. The levy was not breached in part due to the outstanding efforts of Transportation and Development Agency personnel who strengthened the structure prior to the highest flows; however, the free board level above the water was within 18 inches of the top. The community of over 200 families was evacuated as a precaution early on January 8th, but was allowed to return late on January 9th with appropriate cautions. The MCSO dispatched its Command Center to the location to monitor the evacuation and return. The Central Arizona Chapter of the American Red Cross (ARC) opened a shelter at the Littleton Elementary School in Cashion, but due to lack of participants it was later closed.

Of equal concern is an area east of the Holly Acres community that received flood damage. This area is located between Southern Avenue and the Salt River and extends from 105th Avenue to the Agua Fria River.

Other areas evacuated included 6 families from the 51 unit Hawaiian Mobile Home Park located west of Country Club Road in Mesa. The ARC opened a shelter at the Westwood High School in support of emergency operations.

Several families in the New River area became stranded as a result of roads and bridges washing out on New River and Coyote Pass roads. Some families stayed at the New River Community Center until they were able to return home. Through the outstanding efforts of the volunteers of the Arizona Search and Rescue organization, all of the 16 stranded families received support.

Fifteen 15 families in a trailer park 5 miles south of Wickenburg were forced to relocate due to flooding of the Hassayampa River. Extensive damage was done to the trailer park with several trailers

being washed away. A large amount of personal property was lost and is being reported to the Disaster Application Center. The ARC opened a shelter at the Seventh Day Adventist Church in Wickenburg and the Wickenburg Inn opened 5 rooms for family disaster relief.

Arlington School and six farm houses located in the Arlington area received flood damage as the waters spread throughout the unchanneled areas of the west County. Water marks in these homes and the school were about 24 inches high. Although damage was not extensive, considerable cleanup effort was needed to reopen the school. Four homes, two mobile homes and three farms were damaged in the area of 227th Avenue and Beloat with water marks about 24 inches high.

A number of farms and dairies located in the western reaches of the County were adversely affected by the flooding. Farms along Beloat Road west of Tuthill Road, feedlots along Beloat Road and a dairy near 195th Avenue and Highway 85 as well as several dairies at Beloat and Airport Roads received damage including the reports of the loss of livestock. Dead cattle and other animals have been found in the river.

The El Paso Natural Gas Company pipeline received damage during the event. An initial precautionary measure to prevent damage to the pipeline failed when two separate explosions ruptured the pipe. No injuries were reported and restoration work is being done.

A major breach in the Tri-City Landfill on the Salt River Pima-Maricopa Indian Reservation may be one of the more serious challenges to the environment and to health as a result of the flooding. Landfill contents entered the Salt River and spread throughout the river bottom area. Agreements are being drawn up to mitigate against this recurring problem including sealing the old landfill and moving the location. Issues surrounding the landfill erosion problem include questions about who has regulatory and enforcement responsibilities for activities taking place at the landfill site and questions regarding release of hazardous substances into the river and groundwater. In regards to the debris scattered throughout the Salt and Gila River system from Granite Reef to Painted Rock, unresolved issues concern authority to order an all-out river cleanup. A series of meetings are under way to discuss the issue.

Phoenix reported the Verde Water Treatment Plant received considerable damage from high water and would probably have to be shut down for several months. Fortunately a scheduled maintenance was planned for this spring shutting down the facility. Scheduled maintenance and damage repair can now be completed simultaneously. The Del Rio Landfill at 16th Street and the Salt River was nearly breached, but was successfully shored up. A storm drain outfall had been exposed by erosion which could have caused flooding into the landfill. Extensive dike protection was done and no damage was reported.

The San Lucy Village Sewage Disposal Pond located north of Gila Bend was breached causing raw sewage to enter the Painted Rock Dam backwater.

Business establishments receiving damage include many of the sand and gravel operations located near the river bed. Tanner Companies estimated their losses at \$1.4 million and a temporary loss of 75 employee jobs.

Preliminary cost estimates for the City of Phoenix, including mitigation efforts, is estimated at \$4.2 million. Half of the total is for funds to replace the embankment lost at Sky Harbor International Airport along the north bank of the Salt River below the southern runway and to improve the riverbank with reinforced barriers to prevent future erosion.

As a general concern, bridges, their CFS rating and conditions, received added emphasis. The dramatic media video of the New Mill Avenue Bridge construction forms falling into the Salt River caused increased alarm by the public of the general safety of the bridges crossing the river. During the entire event only the grade crossings and the Gilbert Bridge, the 35th Ave Bridge and temporarily the 51st Ave Bridge were closed. Bridges over the Gila River on Highway 85 and Old US 80 to Gila Bend were subject to closure on several occasions either from flooding or during the relocation and explosions of the El Paso Natural Gas pipeline. The I-10 Bridge over the Gila was closed for several hours during the precautionary removal of tanks floating down the Gila River. Water flows below the I-10 Bridge came extremely close to closing the structure.

Gillespie Dam failed when a 100 foot section from the center of the structure was washed away. Extensive repair will be required to restore the dam to its original condition.

Painted Rock Dam continues to provide challenges to the County as of this writing. The dam has nearly filled to its full capacity of 2.5 million acre feet with a corresponding release of up to 12,500 CFS. Recently, the release rate was decreased to 10,000 CFS by the Corps of Engineers due in part to the concern for flooding and bridges located in Yuma County. The road crossing over Painted Rock Dam was closed by the Corps of Engineers because of the high water, restricting residents to the use of the Agua Caliente Bridge. The Agua Caliente Bridge, three miles northeast of Yuma County line, is officially rated at 10,000 CFS; however some authorities feel its capacity could be as high as 20,000 CFS. No concern is expressed for the bridge to fail, but approach washouts may make the crossing unusable. If this bridge becomes unusable approximately 40-50 families may be stranded north of the River. MCDOT officials have been monitoring the Agua Caliente Bridge and drawing up contingency plans to open a higher road to the Painted Rock Dam road crossing if required. Close coordination with the Corps is being done to reopen the road crossing at the dam if it becomes necessary.

Roads and streets closed by the flooding throughout the County were extensive. At one point the Department of Transportation reported 71 locations closed due to flooding. The Department of Emergency Management assumed the responsibility of reporting to the media and to the general public the status of road conditions throughout the area. Several hundred calls were received daily requesting road and bridge conditions throughout the event.

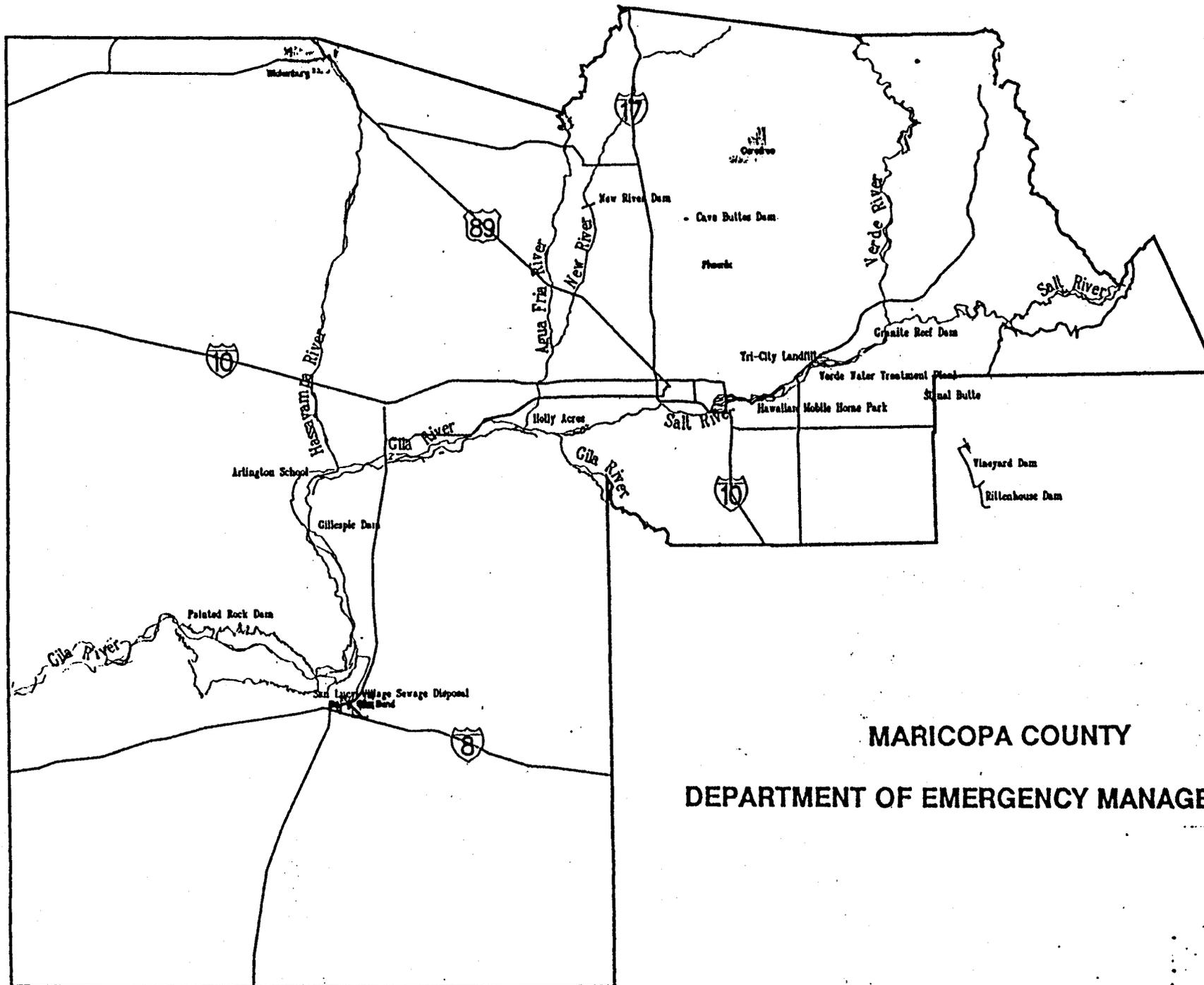
Thunderstorms, hail and tornados associated with the severe weather patterns were reported on January 17. Tornados were sighted in New River, Chandler, Apache Junction, Gilbert and Scottsdale with only Scottsdale reporting damage. Eighteen homes were damaged, 4 with major and 14 with minor damage as the tornado touched down during the noon hour.

Coolidge Dam was required to release water as San Carlos Lake began to fill as a result of storm runoff in the eastern part of the State. By design, the dam does not have large capacity water release mechanisms and therefore must rely on the use of an uncontrolled spillway to lower water levels. At its highest release rate it approached 32,850 CFS, never having released more than 5,000 CFS in the past. Ultimately the outflow flooded several downstream towns on the Gila River before joining the Salt River at 115th Avenue. Water releases from Granite Reef were stabilized at lower release levels to compensate for the increased flows from Coolidge Dam.

In response to the weather forecasts on January 17th and with the threat of heavy rains and the potential of 200,000 CFS water runoff into the Salt and Gila Rivers, the EOC was reactivated after a two day suspension of 24-hour operations. Low lying areas were notified of the potential danger and were pre-warned of the possibility of again being evacuated. Again, the EOC staff performed successfully in their response to this potential disaster.

In the final analysis, the actual flooding danger was not realized due to the pattern of the storm entering the State. The cold front moving from the north pushed the warm tropical flow further south of the Verde watershed, increasing the snow pack to the north and increasing the rainfall in the Tucson area. The worst case scenario of rain on snow pack did not occur and the potential for flooding was decreased dramatically. The Department of Emergency Management stood down the Emergency Operations Center on January 23rd.

Any questions regarding this report, please contact Dennis Cvancara, Department of Emergency Management, 273-1411.



MARICOPA COUNTY

DEPARTMENT OF EMERGENCY MANAGEMENT

Flood Control District of Maricopa County
January 1993 Storms

Recorded Maximum Discharges at FCD Stream Gages

Gage Name	ID #	Gage Height (ft)	Peak Discharge (cfs)	Date / Time
ACDC @ 43rd Ave.				Poor Rating
ACDC @ 67th Ave.	5523	3.6	480	01/08;07:30
Agua Fria @ Buckeye Rd.	5403	1.8	2600	01/11;01:17
Carefree Ranch	6434	0.1	3	1/08;17:56
Cave Creek @ Cactus	6333	11.5	1370	1/10;23:34
Cave Creek @ Cave Creek *	6413	6.9	5800	1/08;01:19
Centennial Wash @ SPRR	5103	2.2	270	1/11;14:30
EMF @ Arizona Ave.				Poor rating due to backwater effects
EMF @ Broadway Rd.	6568	3.0	1580	1/11;04:19
EMF @ Queen Creek Rd.	6583	3.1	1700	1/11;09:01
Estrella Fan				Instrument not yet installed
Gila R. @ Estrella Parkway	6853	19.1	137,300	1/08;19:45
Gila R. @ St. Rt. 85				Gage removed prior to storms
Grapevine Wash	6423	0.7	7	1/08;03:09
Hassayampa R. @ Box Canyon				Gage damaged by floods - Est. peak of 29,000 cfs on 1/08/93
Hassayampa R. @ Wagner Rd.	5353	5.0	13,800	1/08;09:14
IBW @ Indian Bend Rd.	6113	4.3	3900	1/11;02:25
IBW @ McKellips	6099	4.9	3100	1/11;04:02
IBW @ Sweetwater Ave.	6139	3.0	370	1/18;13:42
McMicken Floodway				Poor Rating
New River @ Bell Rd.				Poor Rating - Gage Vandalized
New River @ Glendale Ave.	5508	2.6	6980	1/11;13:46
Pima Wash @ 48th St.				No flow recorded due to instrument failure
Salt R. @ 24th St. *	6023	13.9	88,800	1/08;12:56
Sauceda Wash	6923	1.2	3	1/08;03:45
Skunk Cr. @ I-17	5568	44.5/1	4980	1/11;01:59 1/8 00.11
Vekol Wash				Poor record due to channel construction- probably no flow

* Peak recorded prior to gage being destroyed by floodwaters

NEWS RELEASE

ARIZONA DIVISION OF EMERGENCY SERVICES

5636 East McDowell Road

Phoenix, Arizona 85008

(602) 244-0504

FOR IMMEDIATE RELEASE

FEBRUARY 15, 1992

CONTACT: JOHN PAULSEN

PUBLIC INFORMATION OFFICER

EMERGENCY EROSION CONTROL OF THE SALT RIVER

(Phoenix, AZ) --- Emergency plans for short-term control of erosion and flooding along a landfill adjacent to the Salt River have been formulated. This action has been taken as a result of the Emergency Declaration issued by Governor Fife Symington yesterday, in concert with Senator John McCain, Cities of Scottsdale, Tempe and Mesa, and Salt River Pima-Maricopa Indian Community.

These plans are directed at controlling flood water erosion of the TriCity Landfill which represents a potential environmental and health hazard. Primary concerns focus around increased runoff that may cause additional landfill erosion and ground water contamination and surface pollution.

- more -

NEWS RELEASE

PAGE 2

The state will enter into an agreement with the U.S. Army Corps of Engineers to conduct a field investigation to develop a scope of work and contract for services to build temporary works to minimize the health hazard. The work will include rock plating of the north and south channel to be done by the Corps. Large rocks locally provided will be placed by loaders and graders in an effort to stabilize the banks. Additional machinery and equipment will be provided by local communities and the National Guard of Arizona. It is anticipated that the temporary works will be completed within several days.

State emergency efforts will be coordinated by Mr. William D. Lockwood, Director, Arizona Division of Emergency Services. The Arizona Division of Emergency Services is responsible for coordinating and directing state agency response and recovery activities during declared emergencies and disasters.

Questions regarding state assistance should be directed to Mr. John Paulsen, Public Information Officer, Arizona Division of Emergency Services at 231-6224.

#

Fixing tribal dump may cost millions

U.S. official to observe Salt River site

By Don Harris
The Arizona Republic

Big bucks is what it will take to prevent the Salt River from someday smashing through the Tri-City Landfill north of Mesa, Interior Secretary Manuel Lujan said Tuesday.

He estimated the cost of moving or shoring up the landfill in the Salt River Pima-Maricopa Indian Community at "tens of millions of dollars."

Gov. Fife Symington allocated \$100,000 in state funds late last week to make short-term repairs after the rain-swollen river began eating at the northern end of the landfill.

Lujan, who planned an air tour of the 400-acre landfill today, expressed confidence that federal aid also will be made available.

This winter has been unseasonably wet, forcing the release of water into the Salt, which normally is dry near the landfill. In early January,

the river cut into the site, raising concerns about trash in the river and possible contamination of groundwater.

The danger of breaching the landfill subsided last weekend when the Salt River Project reduced flows into the river from a high of 13,000 cubic feet per second to 5,000 cfs as of Tuesday. The flow is to be cut back to about 4,500 cfs today.

SRP spokesman John Egan said the reductions were possible because the threat of additional rain has subsided.

Lujan and his entourage, including top officials of the bureaus of Land Management, of Indian Affairs and of Reclamation, met for an hour Tuesday morning with Symington and his aides to urge various federal and state agencies and tribal leaders to work together to resolve the landfill problem. Tribal officials said that they would like to move the landfill away from the river in the next few years and that the recent



Interior Secretary Manuel Lujan addresses a groundbreaking ceremony for a student environmental project at Mesa High School. On Tuesday, Lujan met with Gov. Fife Symington to discuss problems at the Tri-City Landfill.

Rob Schumacher/The Arizona Republic

problems may speed that process.

Doug Cole, Symington's press secretary, said Lujan and the governor also discussed Central Arizona Project water allocations and storage, Indian water rights and gambling on Indian reservations.

The Army Corps of Engineers will be the lead agency in determining whether the landfill, which serves 500,000 people in the east

Valley, must be moved soon or whether berms can be built to protect the dump from the river, Lujan said.

"The engineers will tell us how to stabilize it," he said.

"It's going to be difficult because there is material (trash) below the flow of the river. Now it is contained. I don't think it's giving us any problem at the moment.

"But if there were large amounts of runoff, it's liable to breach again, and we would see some of that material floating down the river. Nobody wants to see that."

Lujan made the comments after participating in a groundbreaking ceremony for a student environmental project at Mesa High School. He congratulated the students for their planned study of riverbank habitats.

The Republic Feb 19, 1992

CIVIL DEFENSE AND EMERGENCY SERVICES



MARICOPA COUNTY
2035 North 52nd Street Phoenix, Arizona 85008

273-1411

Frank L. Russo
Director

MEMO TO: James D. Bruner, Chairman, Board of Supervisors
FROM: Frank L. Russo, Director, Civil Defense and Emergency Services
SUBJECT: FEMA DAMAGE ASSESSMENT TEAM
DATE: September 18, 1990

On September 17, 1990, the Federal Emergency Management Agency (FEMA) Damage Assessment Team held a debriefing regarding their damage survey in Arizona from recent monsoon storms. That survey will be the basis upon which the Governor will decide whether or not to request a Presidential Declaration.

The survey was conducted for two incident periods (prior to August 30th and August 30-September 5). The survey result, presented verbally, follows:

Statewide-Public Sector	Approximately \$2.34 million
Maricopa County - Private Sector	Major - 24 homes Minor - 74 homes Affected but habitable - 274 homes

As you will note, the public sector category was presented in terms of dollars, and this figure represented the federal 75% of the total damage. The individual sector figures represented numbers of homes damaged in each category.

This survey information was given to Arizona Division of Emergency Services for their analysis. In turn, they will make an appropriate recommendation for further action by the Governor.

mr



Phoenix

Scottsdale

Glendale

Participating Cities

Mesa

Tempe

Chandler

GLENDALE

1. The Rock Haven Motel, 5102 N.W. Grand Avenue, had several rooms flooded in the August 14/15 storm. The occupants were evacuated.
2. Several houses in the vicinity of 71st Avenue and Campbell were flooded in the September 3 storm.
3. The Dimension Cable office building at the corner of 59th Avenue and Bell Road sustained roof damage during the September 3 storm.

PHOENIX

1. Bell Road and 45th Avenue - 6 homes flooded September 3.
2. 3820 West Sherman Street, 4037 West Sherman Street - flooded August 14.
3. 4237 West Burgess Lane - flooded August 14.
4. 717 West Flynn Lane - flooded August 14.
5. 608 West Mission Lane - flooded August 14.
6. Ironwood Apartments, 9802 N. 9th Avenue - 21 units flooded August 14.
7. Auto Zone Store, 43rd Avenue & Indian School Road - roof collapsed and store flooded to depth of 4 inches August 14.
8. 17006 North 49th Avenue (Lenore Strickland, 978-3807) had minor flooding, but several homes in the neighborhood had more extensive flooding on September 3. Damage at one neighbor's house is estimated at \$25,000.
9. 6618 N. Black Canyon Highway (Floyd Patterson) - 4 units of an apartment complex flooded to a depth of 8 inches on September 3.
10. Atlas Trailer Park, 22416 North 27th Avenue - trailer rented by R.W. Grueling (msg phone 581-2908 or 582-0038) was blown over on July 23. May have been uninsured.
11. 2543 West Village Drive and 2549 West Village Drive were both flooded on both August 14 and September 3. Owner of 2543 W. Village Drive is Michael Bivens, 993-9469.
12. 413 West Caron Street, 9005 North 3rd Drive, 401 West Caron Street and 3 others in the vicinity were flooded on July 24.
13. Several homes on Augusta and Hayward Avenues between 21st and 23rd Avenues were flooded on July 24. One address in 2131 W. Hayward (Sharon Warfel, 995-3518). 2118 W. Hayward and 7742 N. 21st Avenue also flooded.

SCOTTSDALE

1. One house lost to lightning on September 3. No address or location given.

MARICOPA COUNTY

1. Laveen Baptist Church at northeast corner of 51st Avenue and Dobbins was flooded. Approximately 20 homes to the southeast of that intersection were flooded. One flooded home was at 4716 West La Mirada (Steve Tatrai). Storm of 14/15 August.
2. Approximately 20 homes in an area bounded by Arizona Highway 85 on the south, the Buckeye canal on the north, Watson Road on the west, and Dean Road on the east were flooded when the Buckeye canal was breached during the August 14/15 storm.
3. A home at 1747 South Dean Road was flooded during the August 14/15 storm.
4. The Roosevelt Irrigation District north of Buckeye estimates about \$200,000 damage to the canal and \$800,000 damage to homes and farm field surrounding it as a result of several breachings of the canal during the August 14/15 storm.
5. The Buckeye Irrigation Company estimates approximately \$35,000 damage to the canal system from 3 storms - July 15, August 14/15, and September 3.

SUN CITY

1. Mr. Hamer, 15601 North Meadow Park Drive, Florence Thompson, 15605 North Meadow Park Drive both flooded September 3. Approximately 6 other homes in the vicinity also flooded.
2. Sun Grove Nursing Home at approximately 103rd Avenue and Beardsley, north of Sun City. Had flooding in one of their back wings on September 3.

SURPRISE

1. At least 20 homes were flooded and a mobile home extensively damaged on Citrus, Greenway, Happy Valley, and Pinnacle Peak roads in the vicinity of 163rd Avenue during the September 3 storm.
2. Approximately 10 miles of roads were damaged by the September 3 storm.

SCHOOLS

1. Glendale Community College, 6000 West Olive Avenue - transformer knocked out and at least 2 buildings flooded on September 3.
2. Nadaburg School District in Wittman had approximately \$1000 damage from September 3 storm.
3. Glendale Union High School District had 3 schools flooded:
 - . Moon Valley HS, 3625 W. Cactus Road
 - . Greenway HS, 3930 W. Greenway Avenue
 - . Glendale HS, 6216 W. Glendale Avenue
4. American Graduate School of International Management, 59th Avenue and Greenway Road - roof tiles blown off several buildings, possible flooding of several buildings.

AVONDALE

1. The city's sewage settling ponds sustained \$45,000 to \$50,000 damage from the September 3 flood.

YOUNGTOWN

1. Vencor Hospital Phoenix estimated \$12,000 damage from flooding during the September 3 storm.

CIVIL DEFENSE AND EMERGENCY SERVICES

MARICOPA COUNTY

2035 North 52nd Street Phoenix, Arizona 85008

Frank L. Russo
Director



273-1411

MEMO TO: James D. Bruner, Chairman, Board Of Supervisors
FROM: Frank L. Russo, Director, Civil Defense and
Emergency Services and Emergency Services
Robert H. Bishop for FLR

SUBJECT: STATE OF EMERGENCY

DATE: September 6, 1990

The City of Glendale declared a state of emergency within the City on September 6, 1990 due to severe flooding during the Labor Day weekend. The City of Peoria will declare a state of emergency at a Council meeting at 4 P.M. on September 6, 1990.

Estimated damages in Glendale are \$100,000 to City property and streets. Damage to private property has not been estimated yet. Damage estimates in Peoria total \$1,600,000 to public property and streets and \$1,000,000 to private property. The City of Phoenix estimates damages of \$233,500 to public property with no estimate of private damages. Other loses have occurred throughout the County and Cities.

The Governor of Arizona has requested that several Arizona counties be declared Federal Disaster Areas. This would make forms of federal aid available to both the public and private sectors. The Governor's request covers the period from July 8, 1990 to the present. This will allow loses sustained prior to the latest floods to be covered by any federal declaration.

I recommend that the attached Emergency Resolution be signed declaring an emergency in Maricopa County.

cc: Roy R. Pederson, County Manager
Don E. McDaniel, Jr., Deputy County Manager



EMERGENCY RESOLUTION

WHEREAS, said Board of Supervisors does hereby find:

1. That due to heavy rains from July 8, 1990 to September 10, 1990 the County of Maricopa is facing dangerous flood conditions;

2. That due to the floods a condition of extreme peril to life and property beyond the capabilities of said county to control necessitates the proclamation of the existence of an emergency;

NOW, THEREFORE, IT IS HEREBY PROCLAIMED that an emergency now exists throughout said county; and

IT IS FURTHER PROCLAIMED AND ORDERED that during the existence of said emergency the powers, functions and duties of the Board of Supervisors shall be those prescribed by State Law, resolutions and emergency plans of the County of Maricopa in order to mitigate the effects of such an emergency.

Dated: 9-6-90

Jim Bruner
Board of Supervisors, County of Maricopa

Attest: Cherie Pennington
Clerk of the Board of Supervisors
County of Maricopa,
State of Arizona.

Ref: Chap. 2, Article 1, Section 26-311, ARS



Federal Emergency Management Agency

Washington, D.C. 20472

OCT 12 1990

The Honorable Rose Mofford
Governor of Arizona
State Capitol, West Wing
Phoenix, Arizona 85007

Dear Governor Mofford:

This is in response to your October 1, 1990, request to the President for a major disaster declaration for damage as a result of a series of subtropical rainstorms which produced heavy rainfall, flooding and windstorms during the period of July 8-September 14, 1990, in the Counties of Coconino, Gila, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai, and the Havasupai and Gila River Indian Reservations.

Representatives from the Federal Emergency Management Agency (FEMA) conducted a Preliminary Damage Assessment (PDA) with State and local government officials on September 12-16, 1990. The purpose of this assessment was to determine the extent and nature of the damage and the requirement for supplemental Federal disaster assistance.

The PDA Teams found a total of 1,077 homes affected. Of these, 15 were destroyed, 56 had major damage, and 289 had minor damage. The remaining residences sustained minimal damage. Damages were primarily to personal property such as carpeting, electrical outlets, furniture, appliances, and clothing.

As of September 28, 1990, the American Red Cross (ARC) had disbursed or committed for disbursement a total of \$238,100 for emergency assistance. Emergency assistance funds are being made available for furniture, clothing, home repair and rental assistance. The ARC has not yet implemented its Additional Assistance Program, but has indicated that the program would be implemented if required.

We understand that the Small Business Administration (SBA) has identified sufficient uninsured damages to meet their criteria for implementation of the Disaster Loan Program. This program can be provided without a Presidential declaration of a major disaster, provided SBA damage criteria are met.

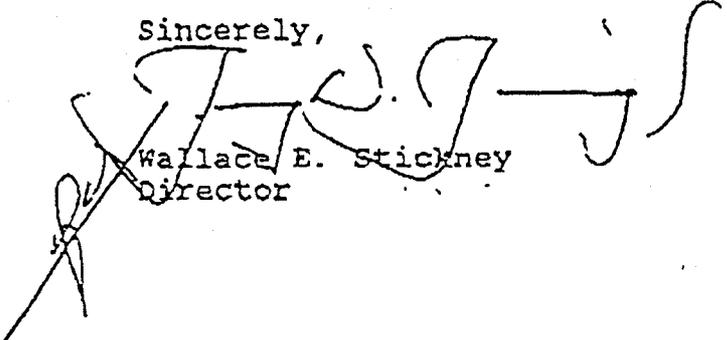
In the public sector, the majority of the damage resulted in the necessity for debris removal, road repairs, and emergency cleaning of flood retention basins and sewer lines. With the help of equipment supplied by the State, all emergency work has been completed and health and safety threats eliminated. At the time of the PDA, approximately 40 percent of road repair work had been completed. No roads are closed due to damage at this time.

Our careful study of the findings indicates that the response is within the physical and financial capabilities of the local governments, with assistance from the State.

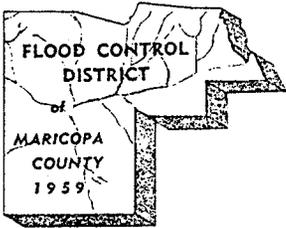
Based on the above findings, we must conclude that a major disaster declaration is not warranted. The severity and magnitude of this situation are not considered to be beyond the combined response capabilities of the State of Arizona and its affected local governments, as required by law.

Through the continuing efforts of the ARC, the State of Arizona, and its local governments we hope that any remaining impacts can be minimized, resulting in a quick and complete recovery.

Sincerely,



Wallace E. Stickney
Director



FLOOD CONTROL DISTRICT

of

Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009

Telephone (602) 262-1501

BOARD OF DIRECTORS

Betsy Bayless

James D. Bruner

Carol C. Carter

	Tom Freestone	
DIP	Ed Pastor	
SSM		
NUCLEAR		
READINESS		11/2
FILE		

D. E. Sagramoso, P.E., Chief Engineer and General Manager

SEP 15 1990

MEMO TO: Board of Directors

VIA: Roy Pederson, County Manager
A. W. Collins, Assistant County Manager/
Public Works Director and County Engineer

FROM: D. E. Sagramoso

SUBJECT: PERFORMANCE OF FLOOD CONTROL DISTRICT STRUCTURES DURING
LABOR DAY 1990 MONSOON STORM

Rainfall amounts expected to occur on average only once every 100 years fell over areas of Northwestern Maricopa County the evening of September 3, 1990. These rains caused extensive street flooding and considerable damage to landscaping along the District's Arizona Canal Diversion Channel (ACDC).

Rainfall of 3.4 inches in a two hour period was recorded at New River Dam near 83rd Avenue and Jomax and 3.5 inches of rain was recorded at 67th Avenue and ACDC (South of Greenway). These precipitation amounts were in excess of the 100-year, 2-hour rainfall event. A 100-year event means rainfall in that amount which has a 1% chance of occurring in a given year. Other significant rainfall amounts were recorded at the intersections of New River and Glendale Avenue (2.28 inches) and at New River and Bell Road (2.64 inches).

By 9:00 p.m. Labor Day, water in the ACDC at the outlet near 75th Avenue was four feet deep and flowing at 2200 cubic feet per second (cfs). Landscaping along portions of the ACDC sustained extensive damage when the capacities of inlets that route water from streets and alleys into the channel were overwhelmed by the tremendous amounts of runoff. This resulted in diverted flows that scoured adjacent landscaping. The greatest damage occurred along Reach 2 of the ACDC which stretches between 29th and 51st Avenues. The Corps of Engineers is presently constructing additional inlets or enlarging existing inlets along this Reach in an attempt to alleviate the problem.

Flows in Scottsdale's Indian Bend Wash peaked at 4,000 cfs at 9:00 p.m. with depths of 4 feet in the low flow channel recorded at the Indian School Road crossing. In North Phoenix, 10 feet of water was impounded behind Cave Buttes Dam, 5 feet behind New River Dam and 2.8 feet behind Adobe Dam. McMicken Dam near Surprise impounded 5 feet of water.

RECEIVED SEP 7 1990

Memo to: Board of Directors
Subject: Labor Day 1990 Storm
Page 2

A privately-owned dam north of Surprise impounded over 12 feet of water and began leaking at two points, causing concerns about its structural integrity. A home is located directly below the dam. The Arizona Department of Water Resources is attempting to determine ownership of the dam, which reportedly was built to serve as a stock pond.

Sections of the Beardsley Canal downstream from Lake Pleasant collapsed when undercut by stormwater runoff, and water was observed overtopping the Santa Fe Railroad tracks north of Grand Avenue at 75th Avenue.

In the East Valley, considerable erosion and undermining of bank protection was observed along the Signal Butte Floodway near Ellsworth and Brown Roads, as well as along the Sossaman Road Drain at Baseline and Sossaman Roads. Flows in the East Maricopa Floodway also occurred and water ponded in excess of 6 feet behind Spookhill and Rittenhouse Dams.

The Labor Day rains came on the heels of a very wet August in which 35 of the District's 100 telemetered rain gauges recorded over 2 inches of total rainfall.


D. E. Sagramoso

Copy to: FCD Advisory Board Members
Civil Defense

MEMO TO: Frank L. Russo, Director, Civil Defense and Emergency Services

FROM: Ruth Aud, Warren Leek, George Nobles, Emergency Planners, Civil Defense and Emergency Services

SUBJECT: DAMAGE FROM STORM OF SEPTEMBER 3, 1990

DATE: September 6, 1990

1. Moon Valley High School, 3625 W. Cactus Avenue, had substantial flooding of the gymnasium and several classrooms. Tommy Beckett delivered 300 empty sandbags to the school on the afternoon of September 4. Classes were cancelled for Tuesday, September 4.
2. Greenway High School, 3930 W. Greenway Avenue, had flooding in the cafeteria and several classrooms. Tommy Beckett delivered 200 empty sandbags. Classes were cancelled for Tuesday, September 4.
3. Glendale High School, 6216 W. Glendale Avenue, had minor roof leaks in the gymnasium and auditorium and several classrooms were flooded. The school had sandbags and did not need assistance in that area. Classes were cancelled for Tuesday, September 4.
4. The transformer at Glendale Community College, 6000 W. Olive Avenue, was down, apparently as a result of the storm and the campus was without electricity and telephone service. Two buildings on the campus incurred minor flood damage. The campus was closed at least through the morning of Wednesday, September 5.
5. The American Graduate School of International Management at 59th Avenue and Greenway had flooding of some dormitory rooms and roof tiles blown from several buildings. Debris from trees was scattered through the campus. Some dormitory rooms appeared to have sustained some flood damage, but I was unable to confirm that because the administrative offices were closed.
6. The grade crossing of the New River at Northern Avenue was flowing heavily and appeared to be under cutting the road along the south side.
7. The Grand Avenue underpass at Dunlap Avenue was flooded with 14 feet of water.
8. Sun Grove Nursing Home on 103rd Avenue north of Sun City had flooding in one of their back wings and 20 patients were evacuated to other health care facilities. The water was cleaned up and the patients returned on Tuesday, September 4.

Memo

September 5, 1990

9. Several houses in the vicinity of 71st Avenue and Campbell in Glendale sustained flood damage, apparently as the result of inflow from surrounding areas.
10. The Dimension Cable office building at 59th Avenue and Bell Road had damage to its roof, but the roof was not blown off as previously reported.
11. The City of Peoria opened it's EOC and the American Red Cross opened a shelter at the Peoria Community Center. Twenty-five people took shelter at the center.

MARICOPA COUNTY DEPARTMENT OF CIVIL DEFENSE
AND EMERGENCY SERVICES

AFTER-ACTION REPORT

STORM/FLOODS - SUMMER 1990

I. BACKGROUND/WEATHER

- A. In 1990, the Phoenix metropolitan area experienced the most damaging monsoon season in several years. The rains, which were heavier than usual, caused wide spread flooding of residential areas, erosion of roads, overtopping of canals, and other property damage such as loss of vehicles by inundation; lightening strikes caused a number of residential and commercial building fires; and winds caused severe damage to aircraft, buildings, manufactured homes, trees, etc.
- B. A complete re-cap of the July and August Storms is at enclosure 1.
- C. In the late afternoon Monday, September 3, the most violent weather of the 1990 monsoon season hit the Phoenix metropolitan area. Strong thunderstorms moved through the valley with wind gusts of 60 to 80 miles per hour and dropped as much as 3.82 inches of rain in some areas. The storms caused the temperature to drop from 98 degrees at 5:00 p.m. to 80 degrees an hour later.

At 5:15 p.m. a tornado touched down north of Union Hills Drive between Seventh Street and Seventh Avenue - no damage reported from the tornado.

59th Avenue between Glendale and Northern Avenues was like a river with water running as much as 20 inches deep. The intersection of 51st Avenue, Bethany Home Road and Grand Avenue resembled a lake.

Waves of water swept across Union Hills Drive and Seventh Street where the flooding was at least three feet deep.

Underpasses on the Black Canyon Freeway (I-17) from Peoria Avenue north to Union Hills Drive were flooded, although I-17 remained open.

About 15,000 Arizona Public Service customers were without power at the height of the storm, including 8,000 who lost service in northwest Phoenix when the Loma Vista substation was flooded.

Salt River Project officials said about 20,000 customers in the east valley lost power when 17 power poles were knocked down.

II. SUMMARY OF EVENTS

A. Peoria Situation

The night of Monday, September 3, Peoria had opened their EOC because of the storm related problems they were having. That evening, the partial evacuation of the Sun Grove Nursing Home went well with the patients being transported to various other nursing homes by ambulance. It had been necessary to evacuate people from several homes. The Red Cross was contacted to open a shelter in the Community Center and they had 25 people spend the night. The following morning, the city set up an assistance center at the Community Center to help residents in the area.

On Wednesday, Fire Chief Fusco, Neil Harrison (from the Red Cross), and the City Manager, Dennis Fredrickson, and Ruth Aud of this Department, toured the areas that had been flooded to see if Peoria should declare an emergency. With the damage estimates received from the public side and the business and private sector damages surveyed, it was decided the city would declare. A council meeting was called for Thursday afternoon, September 6th.

B. Glendale Situation

C. County Situation

1. County Departments

a. Highway Department	\$273,855
b. Parks & Recreation Department	\$ 10,000

2. Unincorporated Areas

a. Buckeye Irrigation Company	\$ 35,000
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b. Roosevelt Irrigation District

<u>1.</u> Business	\$200,000
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<u>2.</u> Private	\$800,000
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<u>3.</u> Wittman	
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<u>a.</u> Public	\$ 1,000
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	<u>a.</u> Business	\$ 12,000
3.	School Districts	
	a. Glendale High School District	\$ 30,000
	b. Glendale Community College	\$ 60,000
4.	Private/Nonprofit Organizations	
	International Management School	\$750,000
D.	Peoria Declaration	
1.	Date of Declaration - Sept 6, 1990	
2.	Damage Estimates	
	a. Public Sector	
	<u>1.</u> City Buildings -	\$ 25,000
	<u>2.</u> Infra-structure -	\$ 31,000
	<u>3.</u> Peoria Schools -	\$ 135,000
	b. Business Sector -	
	Commercial/Industrial	\$1,709,500
	c. Private Sector -	
	Residential	\$ 517,000
E.	Glendale Declaration	
1.	Date of Declaration - Sept 3, 1990	
2.	Damage Estimates	
	a. Public Sector	
	<u>1.</u> Supplies and Equipment -	\$ 31,898
	<u>2.</u> Overtime	\$ 10,947

b. Business Sector

c. Private Sector

F. County Declaration

1. Date of Declaration - September 6, 1990 to cover period July 8 through Sept 10.

2. Damage Estimates - Enclosure 2

a. Public Sector

1. Cities/Towns	\$2,412,618
2. County/Other	\$ 574,855
	<hr/>
	\$2,987,473

b. Business Sector

1. Cities/Towns	\$ 187,000
2. County/Other	\$ 247,000
	<hr/>
	\$ 434,000

c. Private Sector

1. Cities/Towns	\$1,610,000
2. County/Other	\$1,550,000
	<hr/>
	\$3,160,000

G. A State Proclamation was initially signed on July 27th because of storm damages (wind and flooding) in Mohave, Gila, Pima and Yavapai Counties. Maricopa County was Added to the State Proclamation on September 7, 1990.

1. Other Counties included in the State Proclamation are:

<u>INCIDENT PERIOD</u>	<u>COUNTIES</u>	<u>DECLARATION DATE</u>
08 - 24 JULY 90	Mohave	23 July 90
	Gila	25 July 90
	Pima	26 July 90
	Yavapai	26 July 90

12 - 21 AUG 90	Pinal Graham	20 Aug 90 24 Aug 90
30 AUG - 05 SEP 90	Coconino Maricopa Yavapai	03 Sept 90 06 Sept 90 11 Sept 90

2. The purpose of the State Proclamation is to make all of the State's resources available to cope with the disaster or other situation which has arisen. It is also a necessary pre-requisite to requesting a Presidential Declaration.
 3. Prior to requesting a Presidential Declaration, it is necessary to request Federal and State (FAST) Team(s) from the Federal Emergency Management Agency (FEMA) Region IX. These Teams survey the disaster site(s) in order to verify the estimates of damages incurred and to determine if the damages and their impact on the quality of life of the community are sufficient for the Governor to request a Presidential Declaration.
- H. The Arizona Division of Emergency Services initiated a request for FAST Teams on September 10.
- I. Prior to the arrival of the FAST Teams, this Department requested damage survey assistance on an "as needed" basis from the Assessor's Office and the Building Safety Division. The names and telephone numbers of the designated personnel were included in our "list of contacts" but the need to use their assistance did not arise.
- J. 1. The FAST Teams from FEMA Region IX arrived in Phoenix on morning of September 12 and received an In-Briefing at the offices of the Arizona Division of Emergences (ADES).
2. FAST Team Composition varied with the type of team. Public Damage Teams had 2 FEMA representatives and 1 ADOT representative. The Individual Assistance Teams were composed of a representative of FEMA, a representative of the Small Business Association (SBA) and a representative of the county
- K. FAST Team Activities in Maricopa County
1. Public Damage Team (1)

2. Individual Assistance Teams (2)
3. Staff Assistance Provided - Ruth Aud, Warren Leek and Royce Pettit of this Department assisted the Individual Assistance Teams.
4. Inclusive Dates of Survey - September 12-17, 1990.
5. Jurisdiction Contacts - see attached
6. County Contacts - see attached
7. Team Procedures
 - a. Visited jurisdictions that indicated large damages.
 - b. Telephoned jurisdictions with lesser damages and after telephonic verification of types of damages, accepted estimated dollar figures originally submitted.
 - c. Met with Highway Department and Flood Control District Representatives to discuss and verify information.

III. FAST Team Out-Briefing Results

- A. Presidential Declaration?
 1. Public Assistance
75% Federal - 25% Jurisdiction/Agency
 2. Individual Assistance
- B. Non-Presidential?
 1. State Assistance Only to Public Sector
 - a. 30% State - 70% Jurisdiction/Agency

IV. Presidential Declaration (Tentative)

V. Disaster Application Centers (DAC) (Tentative)

- A. Purpose
- B. Selection
- C. Location(s)

D. Notification of Jurisdictions, Public, Businesses

1. Radio/TV Announcements

2. Posters

E. Make-up of DAC

1. Federal Agencies Represented

2. Governor's Authorized Representative (GAR)

F. Duration

VI. Lessons Learned - see attached

VII. Attachments

A. Event Log

B. Documents referred to in Event Log

C. Packet Distributed to FAST Team Members

INCLOSURE 1

RECAP OF STORMS

On Tuesday, July 10, the first of the monsoon storms hit. It caused approximately \$50,000 damage to an apartment complex and an undetermined amount of residential damages in the City of Goodyear. This storm also caused \$25,000 - \$50,000 wind damage in Phoenix, and a lightening strike in Scottsdale set fire to a residence. Several thousand homes and businesses were without electric power for several hours after the storm.

An early morning thunderstorm on Sunday, July 15, resulted in street flooding and road closures in Peoria, west Phoenix, and other west valley locations. The Rubbermaid plant in Goodyear sustained \$20,000 - \$50,000 damages to its fire protection system and landscaping.

On Saturday night, July 21, a powerful storm hit northwest Phoenix. Some of the more heavily damaged areas included the general vicinities around 25th Avenue and Butler, 19th Avenue and Bell Road, and 35th Avenue and Beardsley. Typical damages in these areas included large sections of roof tiles/shingles blown away, mature trees uprooted or broken, roof-mounted air conditioners blown down, wooden fences blown over, and windows broken. A mobile home was destroyed and another severely damaged in the vicinity of 27th Avenue and Deer Valley Road. Approximately 65,000 homes and businesses were blacked out at various times during the storm. APS sustained about \$350,000 in damages to lines and poles. Deer Valley estimated nearly \$1 million due to damages to 10 aircraft, doors blown off hangars, and damages to other buildings. Substantial flooding also occurred in northwest Phoenix.

On Tuesday, July 24, another major thunderstorm hit the Phoenix metropolitan area. In Scottsdale, three vehicles were swept away by floodwaters in Indian Bend Wash. In Phoenix, lightening caused fires did an estimated \$100,000 damage to an apartment complex near 35th Avenue and Indian School Road, and \$30,000 damage to another apartment complex at 35th Avenue and Dunlap. Winds blew the roof off of a Circle K at 35th Avenue and Union Hills. Several homes were flooded due to localized street flooding and lack of adequate drainage and six homes near 4th Avenue, north of Dunlap were flooded - due partially to on-going construction of the ACDC. Several major street intersections were flooded in northwest Phoenix.

The night of July 24, Fountain Hills experienced a thunderstorm in which lightening struck a house and caused an attic fire. Damages estimated at \$20,000.

On Monday night, July 30, a thunderstorm hit eastern Maricopa County. Mesa Insulation, a business located one-half mile north

of the intersection of Center Street and Southern Avenue in Mesa sustained \$10,000 - \$20,000 in damages when it was struck by "tornado-like" winds. A 90' x 26' section of metal roof was ripped from a three sided storage building. The roof landed in the lot behind its original location. Many locations in Mesa reported loss of electrical power during the storm.

On Tuesday evening, July 31, a storm passed through Mesa and Chandler. Lightening caused some power outages and palm tree fires, but no major damage was reported.

On Monday, August 6, a thunderstorm-associated microburst hit in the vicinity of Luke Air Force Base. The base sustained over \$1 million damage as a result of toppled structures, trailers, poles, signs, and roofs, along with minor damage to 12 jet fighter aircraft. Two trailers at the JJ Trailer Park, near the intersection of Glendale Road and Dysart Road, were heavily damaged - one lost its roof and the other was blown off its foundation.

On Tuesday evening, August 11, a heavy storm caused street flooding in northwest Phoenix and loss of electric power in the West Valley, Mesa, and Tempe. Interstate 10 was closed from the town of Buckeye to the California state line from 7:30 p.m. to 8:30 p.m.

ON Wednesday night, August 12, a storm caused brief losses of electric power for up to 1000 APS customers, but no major damage was reported.

A slow, steady rain which lasted most of the day Tuesday, August 14, and Wednesday morning, August 15, resulted in heavy flooding in several Valley locations. Some specific areas were:

- o Approximately 20 homes and the Baptist Church were flooded in Laveen when rain flowing into the irrigation canal alongside of Dobbins Road caused it to overflow and to overtop.
- o On the Gila River Indian Reservation, more than 30 people were evacuated as a result of their homes being flooded.
- o The Auto Zone store at 43rd Avenue and Indian School Road had the roof collapse and the store flooded to a depth of four inches.
- o The Rock Haven Motel, near the intersection of 51st Avenue and Bethany Home Road, had flood water as deep as three feet in some rooms. Occupants were evacuated.
- o Ironwood Apartments, near 9th Avenue and Butler Drive, had 21 units flooded.
- o East of the town of Buckeye, approximately 20 homes

between Baseline Road and the Buckeye Canal were flooded when the canal overtopped. The damage to the canal is estimated at \$20,000; the dollar value of the damage to the homes is unknown.

- o North of the town of Buckeye, the Roosevelt Canal overtopped in several places causing an estimated \$200,000 damage to the canal system. Damage to the surrounding area as a result of flooding of homes, washed-out irrigation ditches, etc. is estimated at approximately \$800,000.
- o In the city of Phoenix, locations at which homes were flooded include 43rd Avenue and Buckeye Road, 7th Avenue and Glendale Avenue, and 7th Avenue and Dunlap Avenue. An apartment was flooded at I-10 and Bell Road.
- o In El Mirage, Dysart Road was washed out between Greenway and Thunderbird Roads when a farm levee gave way. Repairing this damage along with several other small road repairs cost the city approximately \$10,000.

CITY OF
GLENDALE

ger

The flooding that occurred during August 11 - 15 1990 has had a significant effect on the city from a monetary perspective. The following is a breakdown of the cost both direct and indirect associated with this emergency situation.

Direct Cost to City

Supplies and Equipment

Sandbags -----	\$ 10,138
Sand (520 tons) -----	\$ 3,250
Asphalt (temp street repair) -----	\$ 925
Rental of pumps -----	\$ 2,968
Barricade rentals -----	\$ 300
Lost or damaged equipment -----	\$ 582
Relocation Benefits -----	\$ 13,635
Food -----	\$ 100
 SUB TOTAL *****	 \$ 31,898

Overtime

Police Department -----	\$ 1,087
Utilities -----	\$ 620
Field Operations -----	\$ 8,120
Materials Mgt -----	\$ 80
Fire Dept. -----	\$ 1,040
 SUB TOTAL *****	 \$ 10,947
 TOTAL DIRECT COSTS *****	 \$ 42,845

INDIRECT COSTS

REGULAR STAFF HOURS SPENT ON FLOOD

Police Dept. -----	\$ 13,311
Bldg Safety -----	\$ 350
Neighborhood Resources -----	\$ 1,200
Transit -----	\$ 78
Fire -----	\$ 1,440
Field Operations -----	\$ 22,775

SUB TOTAL ***** \$ 39,154

STREET REPAIRS IN PROGRESS

Street and right of way erosion - \$ 28,000

INDIRECT COST TOTAL ***** \$ 67,145

DIRECT COST TOTAL ***** \$ 42,845

TOTAL COST TO CITY ***** \$109,990

I will be conducting a critique of the incident with other department heads to improve our response to the citizens needs during future emergencies.

CITY OF PEORIA, ARIZONA
COUNCIL COMMUNICATION

CC NO: _____ AMEND. NO: _____

Date Prepared: September 6, 1990
Meeting Date: September 6, 1990

TO: Honorable Mayor and Council
FROM: Dennis L. Frederickson, City Manager
SUBJECT: Storm Damage Assessment

COPY

SUMMARY:

A Red Cross Damage Assessment team supplemented by a City of Peoria team have been conducting an extensive survey of structural and infra-structure damage sustained in the September 3, 1990 storm in accordance with the City of Peoria Disaster Plan. In addition to public and residential structures, city infra-structure such as streets and right-a-ways have received significant damage resulting in road closures and restricted access. The emergency shelter continues to operate under Red Cross supervision at the Community Center for displaced individuals. Initial assessments indicate that high winds and flooding have resulted in an estimated \$2,417,500 damage.

Loss estimates are categorized as follows:

a. City Buildings	\$ 25,000
b. Infra-Structure	\$ 31,000
c. Commercial/Industrial	\$1,844,500
d. Residential	\$ 517,000
TOTAL	\$2,417,500

Motion: _____
Second: _____
Approved: _____ Failed: _____
Nays: _____

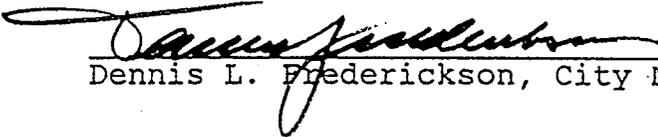
Ord. # _____ Res. # _____
Action Date: _____

Council Communication No.
September 6, 1990
Page 2

The County Civil Defense representative for the City is continuing to survey the City in an attempt to identify additional damage including photographs to support estimates. Revised loss estimates (including indirect costs) will be provided on a daily basis until recovery efforts have stabilized.

ATTACHMENTS

1. Staff Report
2. Exhibits 1 through 5


Dennis L. Frederickson, City Manager

CITY OF PEORIA, ARIZONA
STAFF REPORT

DATE: September 6, 1990
TO: Dennis L. Frederickson, City Manager
FROM: Michael F. Fusco, Fire Chief
SUBJECT: Storm Damage Assessment

DISCUSSION:

Efforts to effectively assess the extent and magnitude of damage sustained from the September 3rd storm have been initiated. A Red Cross Damage Assessment Team supplemented by a City of Peoria team (in conformance with the Disaster Plan) have conducted an extensive survey of structural and infra-structure damage. This survey reveals increased monetary loss from original estimates obtained from the initial survey of 4 September.

Extensive flooding has resulted in extensive damage to city streets requiring continuing efforts for repair. Cactus Road from 83rd to 91st Avenues remains impassible due to structural erosion. Milwaukee Avenue, west of the Sports Complex, is closed due to damage. The Public Works Department is continuing temporary repairs and debris removal. Current estimates indicate an initial loss of \$31,000, however, cost of permanent repairs have not been estimated and will certainly result in an increased loss forecast.

City buildings and property received approximately \$25,000 in damage. This includes water damage to:

- a. Fire Administration,
- b. Public Safety Building,
- c. Park View Apartments,
- d. Municipal Operations Center,
- e. South parking lot of Sports Complex sustained significant erosion damage along the Skunk Creek berm.

Excessive accumulation of water has rendered the Greenway Sports Complex unusable over the last three days resulting in cancellation of scheduled activities.

Most seriously effected in terms of total dollar loss is the commercial/industrial segment of the community (\$1,844,500). Included in this estimate is \$135,000 of structural damage to Peoria School District buildings within the city limits (\$100,000)

of this damage is attributed to roof and floor damage of the Peoria High School gymnasium). Silo Appliances received approximately \$750,000 damage including structure and contents. Buildings sustaining in excess of \$100,000 in damage are as follows:

- | | | |
|----|-------------------------------------------------------|-----------|
| a. | Desert Amethyst | \$350,000 |
| b. | Silo Appliances | \$750,000 |
| c. | Synder Storage | \$250,000 |
| d. | Westbrook Village Golf Course and adjoining facility | \$250,000 |
| e. | Peoria Schools (estimate provided by school district) | \$135,000 |

As common with most disasters, the effect on the residential community has the most significant impact on the emotional well being of the public. High winds and flood waters resulted in an estimated monetary loss of \$517,000. These losses are categorized as follows:

- | | | |
|----|-----------------------|-----------|
| a. | fences and barriers - | \$100,000 |
| b. | structural damage - | \$342,000 |
| c. | roofing materials - | \$ 75,000 |

Residential areas most significantly effected include:

- Sun Dial Mobile Home Park (75th Avenue, North of Olive)
- Varney area (83rd to 79th Avenue/Varney to Leyva Road)
- Edwards and Stone streets (west of 83rd Avenue)
- Cinnabar and Brown streets (east of 75th Avenue)

Surveys indicate that significant damage has been sustained in these areas and that recovery efforts are continuing.

Not included in the loss estimates are city resources directed toward mitigation and recovery. * These include:

- sand and sandbags,
- city fuel and vehicles,
- personnel overtime requirements (175 hours for initial recovery efforts).

* Staff has been requested to provide these figures as soon as figures become available.

A table dollar loss by property category is as listed:

a.	City Buildings Damage to City Buildings does not include Sports Complex.	\$ 25,000
b.	Infra-Structure Manhours for road clean up may increase this amount.	\$ 31,000
c.	Commercial/Industrial Figures are owner/manager estimates. May increase after insurance adjustments.	\$1,844,500
d.	Residential Building Safety estimates on fences, roofs, and structures.	\$ 517,000
	TOTAL	\$2,417,500

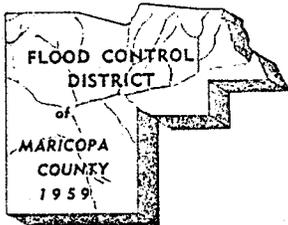
CONCLUSION/ALTERNATIVES

1. The City of Peoria has sustained significant damage from winds and rain from the September 3, 1990 storm. It is anticipated that the initial loss estimate of \$2,417,500 will increase as recovery efforts continue. A County civil defense representative is continuing to survey the city in an attempt to identify additional damage including photographs to support estimates. Revised loss estimates will be provided on a daily basis until recovery efforts have stabilized.

ATTACHMENTS

1. Exhibits 1 through 5

Michael F. Fusco, Fire Chief



FLOOD CONTROL DISTRICT

of

Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

RECEIVED AUG 21 1990

BOARD OF DIRECTORS

Betsey Bayless
James D. Bruner
Carole Carpenter
Tom Freestone
Ed Pastor

D. E. Sagramoso, P.E., Chief Engineer and General Manager

AUG 17 1990

MEMO TO: Board of Directors

VIA: Roy A. Pederson, County Manager
A. W. Collins, Assistant County Manager/
Public Works Director and County Engineer

FROM: D. E. Sagramoso

SUBJECT: PERFORMANCE OF FLOOD CONTROL DISTRICT STRUCTURES DURING
AUGUST 1990 MONSOON STORMS

The Arizona Canal Diversion Channel (ACDC) transported flows of up to 5 feet in depth and the East Maricopa Floodway (EMF) registered depths of 4 feet during intense thunderstorms occurring throughout the County August 14 and 15. Such flows were indicative of the storm's impact throughout the Phoenix Metropolitan Area as streams and channels filled with runoff from rainfall amounts in excess of 2 inches.

At the height of the storm, 16 feet of water was impounded behind Dreamy Draw Dam, 14 feet behind Cave Buttes Dam and 9 feet at Adobe Dam, all North Phoenix structures. While effectively detaining such flows, these structures were by no means full, as less than 2 percent of their reservoir capacities were utilized. In Eastern Maricopa and Northern Pinal counties, 6 feet of water was detained behind Rittenhouse Dam and 3.5 feet behind Spook Hill Dam. Guadalupe Dam had 5.5 feet by 7:00 a.m. on the 15th.

During the two-day storm, peak stream flows of 5 feet were recorded in Centennial Wash; 4-foot flows were observed in the Gila River at Highway 85, in New River at Glendale Avenue and in the EMF at Elliot Road; 3.5 feet of water flowed in the Hassayampa River at Wickenburg; 3 feet in Vekol Wash at Interstate 8 and in Cave Creek at Cave Creek Road; and 2 feet in the Salt River at 24th Street and in Saucedo Wash located in Gila Bend. Additionally, flows in Indian Bend Wash measured 2.7 feet at McKellips Road by late afternoon on the 15th.

	TO	BY
DIA	1	
SCM	2	<i>[Signature]</i>
NUCLEAR		
READINESS		
<i>Quincy</i>	3	
FILE	4	<i>with logs</i>

Memo to: Board of Directors
Subject: August 1990 Storms
Page 2

A peak discharge of 2500 cubic feet per second (cfs) was reported on the Agua Fria at Buckeye Road, 1300 cfs in Saucedo Wash, 1000 cfs in Cave Creek at Cave Creek Road, 833 cfs from Adobe Dam, 814 cfs from Spook Hill Dam, 200 cfs from Cave Buttes Dam and 135 cfs from Dreamy Draw Dam. Stormwater in the Sossaman Drain in Mesa was measured at 3 feet and overtopped the canal at 9:00 a.m. on the 14th, flooding portions of Guadalupe Road.

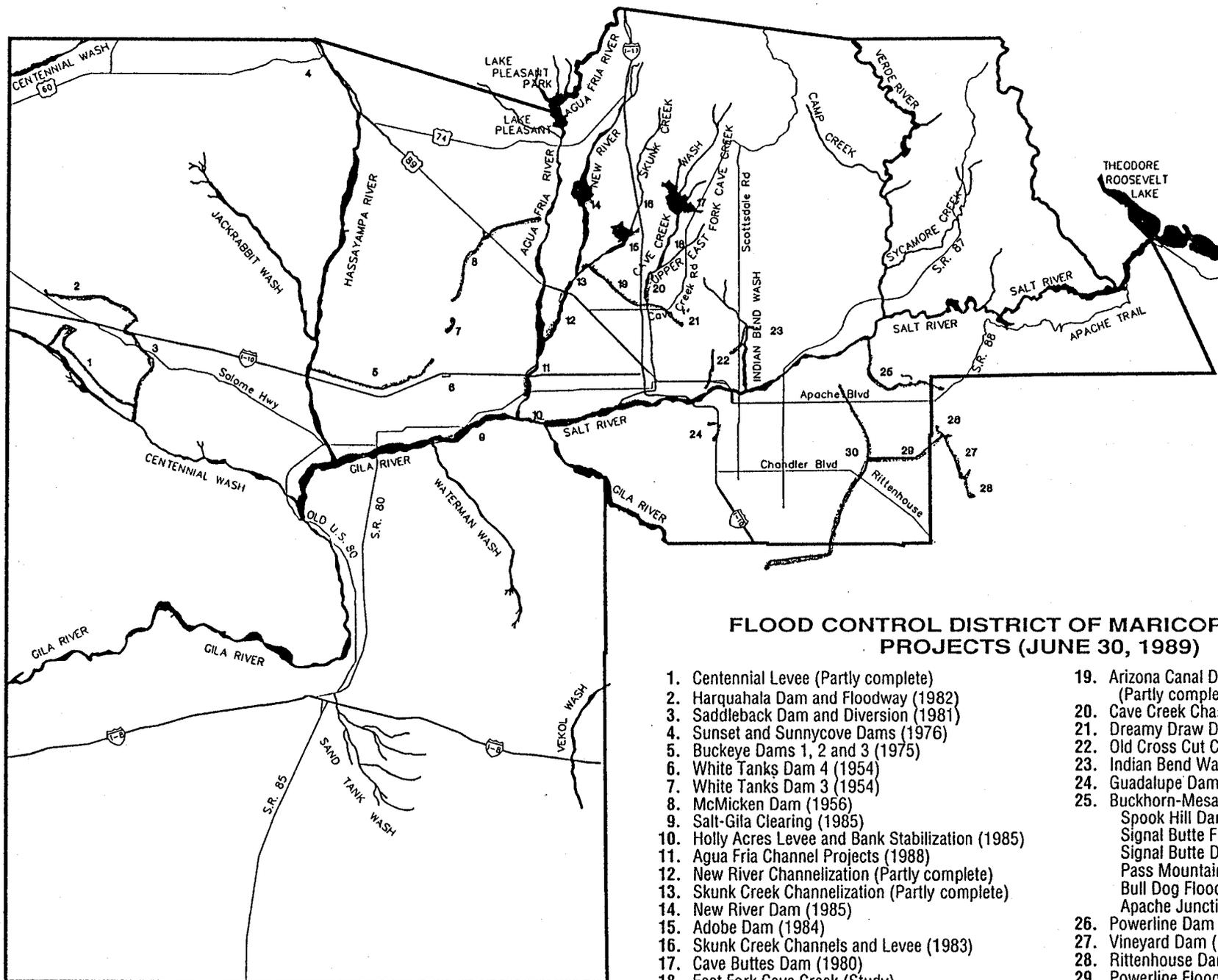
Water in the ACDC reached a depth of 5 feet at 43rd Avenue at 11:15 a.m. August 14, with 3 feet of water recorded in the unlined portion near 67th Avenue. Flows at the 67th Avenue location were estimated at 4,000 cfs.

The maximum rainfall amount recorded by a District gauge August 14 was 2.44 inches at Mount Ord during the 36-hour period ending August 14 at 3:00 p.m. Mount Ord is in the Mazatzal Mountains northeast of Bartlett Reservoir. Other 36-hour rainfall amounts included 2.4 inches at New River and I-17, 2.3 inches at the Buckeye FRS, 2.09 inches at King's Ranch east of Apache Junction, and 1.85 inches at the Magma FRS northeast of Florence.

Significant amounts of rainfall were reported the morning of August 15 between midnight and 7:00 a.m. at Adobe Dam (2.17 inches), at White Tanks #4 west of Goodyear (1.73 inches), at Dreamy Draw Dam in northeast Phoenix (1.61 inches), and at Queen Creek (1.38 inches).


D. E. Sagramoso

Copy to: FCD Advisory Board Members
Civil Defense



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (JUNE 30, 1989)

1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)
9. Salt-Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (1988)
12. New River Channelization (Partly complete)
13. Skunk Creek Channelization (Partly complete)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek (Study)
19. Arizona Canal Diversion Channel (Partly complete)
20. Cave Creek Channelization (Partly complete)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
 - Spook Hill Dam (1979)
 - Signal Butte Floodway (1984)
 - Signal Butte Dam (1987)
 - Pass Mountain Diversion (1987)
 - Bull Dog Floodway (1988)
 - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)

RAINFALL EVENT SUMMARY

DATE Aug. 15, 1990 TIME Midnite to 0700

The storm was centered around the Metvo area of Maricopa County, and it

primarily affected the cities of Phx., Glendale.

The maximum rainfall amount measured on a Flood Control District gauge was 2.17 inches in 1 hours.

This gauge was located at Adobe Dam. Other significant rainfall amounts were recorded

at White Tanks 4 : 1.73 South Mt. : 2.05
(location) (amount) (location) (amount)

Dreamy Draw : 1.61 Queen Creek : 1.38
(location) (amount) (location) (amount)

The maximum rainfall recorded at the airport by the National Weather Service was ≈ 0.5

The following structures maintained by the Flood Control District reported significant amounts of water impounded:

STRUCTURE NAME	AMT. IMPOUNDED (in feet)	CFS RELEASES (as appropriate)	REL TIMES
1. <u>Cave Batters Dam</u>	<u>14'</u>	<u>200</u>	<u>-</u>
2. <u>Adobe Dam</u>	<u>9'</u>	<u>-</u>	<u>-</u>
3. <u>Dreamy Draw</u>	<u>16'</u>	<u>-</u>	<u>-</u>
4. <u>Buckeye FRS</u>	<u>1.2'</u>	<u>50</u>	<u>-</u>
5. <u>White Tanks 4</u>	<u>1.7'</u>	<u>-</u>	<u>-</u>
6. <u>Ritterhouse</u>	<u>6'</u>	<u>63</u>	<u>-</u>

COMMENTS: (damages prevented by our structures? Damages to our structures? Other?)

Rainfall intensities from this morning are as
much as a 25 year return frequency.

RAINFALL EVENT SUMMARY

DATE Aug. 15, 1900 TIME 7:00 to 8:30

The storm was centered around the Metro area of Maricopa County, and it primarily affected the cities of Phx Glendale Scottsdale.

The maximum rainfall amount measured on a Flood Control District gauge was 2.17 inches in 1 hours.

This gauge was located at Adobe Dam. Other significant rainfall amounts were recorded at _____ (location) _____ (amount) _____ (location) _____ (amount)

_____ (location) _____ (amount) _____ (location) _____ (amount)

The maximum rainfall recorded at the airport by the National Weather Service was _____

The following structures maintained by the Flood Control District reported significant amounts of water impounded:

STRUCTURE NAME	AMT. IMPOUNDED (in feet)	CFS RELEASES (as appropriate)	REL. TIMES
1. <u>Dreamy Draw</u>	<u>4'</u>	<u>50</u>	<u>-</u>
2. <u>Adobe Dam</u>	<u>8.5'</u>	<u>-</u>	<u>-</u>
3. <u>Cave Bottes Dam</u>	<u>14'</u>	<u>200</u>	
4. <u>Guadalupe FRS</u>	<u>5.5'</u>	<u>-</u>	
5. <u>Spookhill FRS</u>	<u>1.2'</u>	<u>350</u>	
6. <u>Vineyard FRS</u>	<u>1.4'</u>	<u>30</u>	

COMMENTS: (damages prevented by our structures? Damages to our structures? Other?)

Flows are occurring in New River, Skunk Creek, Cave Creek, Indian Bend Wash, ACDC, and Salt River.

FLASH FLOOD WATCH ISSUED AT 9:15 AM ON AUGUST 14, 1990

FLASH FLOOD WATCH FOR CENTRAL HAS BEEN EXTENDED AND EXPANDED UNTIL 2PM. THE FLASH FLOOD WATCH ISSUED EARLIER FOR GILA, EASTERN MARICOPA, AND EASTERN PINAL COUNTIES HAS BEEN EXTENDED UNTIL 2PM. THE FLASH FLOOD WATCH HAS BEEN EXTENDED TO INCLUDE THE REMAINDER OF MARICOPA AND PINAL COUNTIES AND THE WESTERN HALF OF PIMA COUNTY. VERY HEAVY RAIN CONTINUED TO FALL IN CENTRAL ARIZONA BETWEEN PHOENIX AND GLOBE SOUTHWARD TO ORACLE IN SOUTHEAST PINAL COUNTY. FLASH FLOOD WARNING ARE IN EFFECT FOR THESE COUNTIES UNTIL NOON. AT 9 AM SATELLITE PICTURES INDICATE THE RAIN SHEILD IS EXPANDING SLOWLY WESTWARD AND SOUTHWESTWARD. AT ITS CURRENT RATE OF EXPANSION IT WILL EVENTUALLY COVER MOST WESTERN MARICOPA COUNTY, WESTERN PINAL AND WESTERN HALF OF PIMA COUNTIES IN THE NEXT SEVERAL HOURS. THE FLASH FLOOD WATCH COVER THE HIGHWAYS CONNECTING PHOENIX, GILA BEND, AJO, CASE GRANDE, PAYSON, GLOBE, MIAMI, AND OTHER LOCATIONS IN WESTERN PIMA, PINAL AND MARICOPA COUNTIES.

Put out on Sheriff's call re: Russo

lw

0915-0920

Flood Cont - 0932

Eg Lvs - 0935

Hgh Rpt - 0937