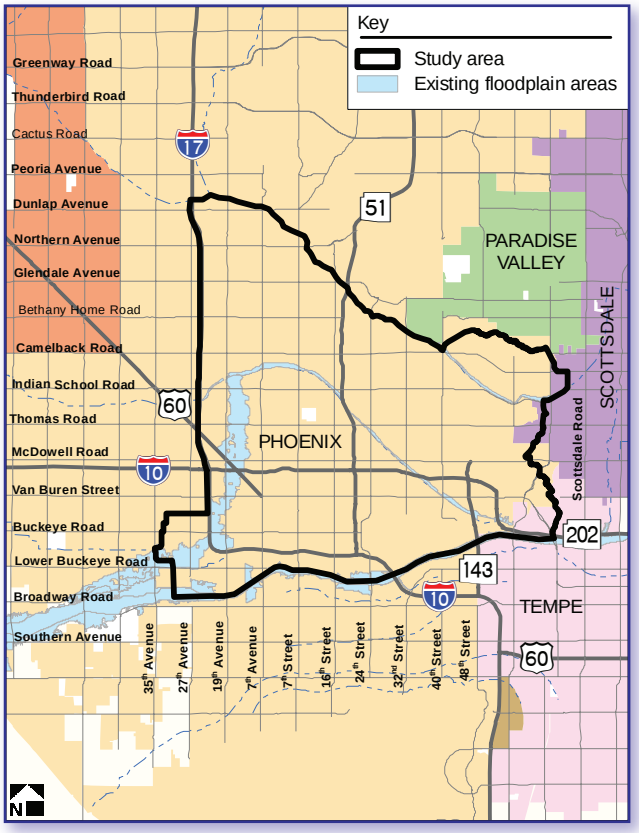
Metro Phoenix area drainage master plan

JULY-AUGUST 2007

Study Purpose

The Flood Control District of Maricopa County (District), in association with the City of Phoenix (City), is conducting the Metro Phoenix Area Drainage Master Plan (Metro ADMP). The Metro ADMP is intended to quantify the extent of drainage and flooding problems within the study area and to develop proposed drainage plans to reduce flooding hazards. The City and the District will use these conceptual drainage plans to identify, define, and budget future drainage improvement projects.



Project Area

Purpose of the Public Meetings

The purpose of this series of public meetings is twofold. The Metro ADMP study team will present the latest study developments, provide information on the alternative drainage measures, and solicit your comments regarding the proposed alternatives.

Secondly, information on the preliminary re-delineation of the boundary for the Cave Creek floodplain will be provided. This re-delineation will be submitted to the Federal Emergency Management Agency (FEMA), and if approved, the revised boundary may result in a number of properties being removed from the existing floodplain.

Study Area

The Metro ADMP study area is located mainly within the City of Phoenix; however, it includes small portions of the Cities of Scottsdale and Tempe along its eastern boundary. The study area is approximately 90 square miles and specifically covers the older developed part of Phoenix that is located south of the Arizona Canal and north of the Salt River, between Interstate 17 (I-17) and the Papago Buttes.

Study Progress

Since the August 2006 public meeting, the Metro ADMP study team has completed the following tasks:

- Developed a rainfall-runoff computer model of existing hydrologic conditions
- Reviewed the Cave Creek floodplain between Grand Canal and the Salt River
- Assessed environmental issues
- Evaluated multi-use opportunities within the study area
- Formulated and analyzed potential drainage alternatives
- Coordinated the involvement of local agencies and groups

Flood Control District of Maricopa County

Flood-Prone Areas

The Metro ADMP study team has identified several flood-prone areas. These areas were identified by analyzing the existing hydrologic conditions within the study area, reviewing citizen input from previous public meetings, and investigating drainage complaints filed with the City.

Cave Creek Floodplain – This area incorporates the Cave Creek floodplain and its adjacent areas. Due to the topography of the area, runoff from large storms can exceed the capacity of the storm drain system and flood low-lying areas.

Old Cave Creek Floodplain – The area downstream of the Arizona Canal was part of the Cave Creek floodplain before the U.S. Army Corps of Engineers constructed the Arizona Canal Diversion Channel (ACDC) to divert floodwaters. This area exhibits much of the same shallow flooding problems associated with the Cave Creek floodplain area.

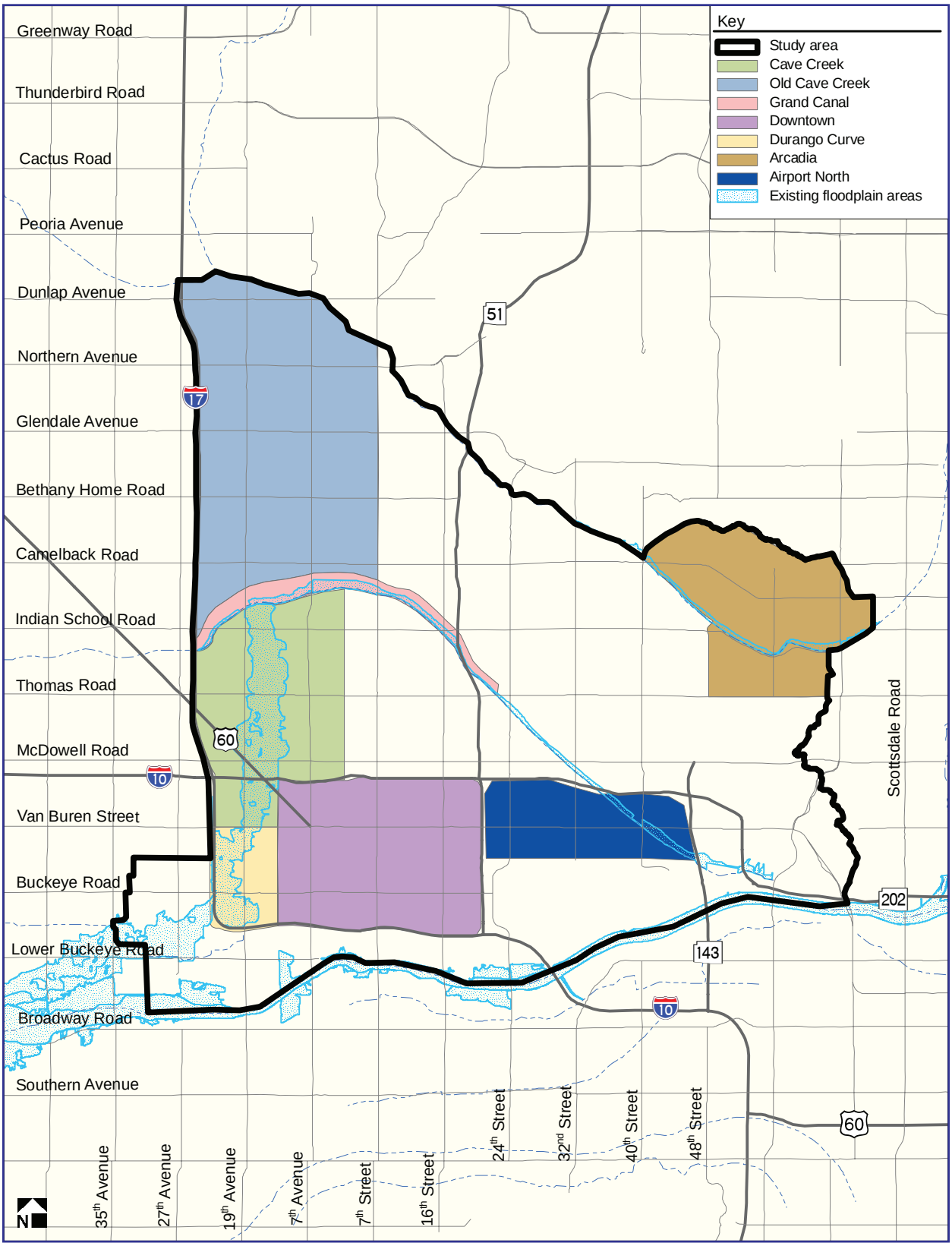
Grand Canal – During large storms, when the storm drain system capacity is exceeded, runoff builds up on the north side of the elevated banks of the Grand Canal and floods adjacent residential and commercial properties.

Downtown – The downtown area is subject to substantial flood flows, as evidenced by the August 2005 flood that seriously disrupted the downtown area. Flooding problems in this area are largely due to the lack of open, undeveloped land that can absorb water.

Durango Curve (I-17 at Durango Street) – Most of the study area drains into this location upstream of the Durango curve. If the capacity of the storm drain system in this area is exceeded, ponding of stormwater behind the elevated I-17 roadway results in flooding of a number of homes and businesses.

Arcadia/Old Crosscut Canal Watershed – The Arcadia area is subject to flooding from Camelback Mountain runoff. In addition, several properties located in the Old Crosscut Canal Watershed downstream of the Arizona Country Club have a history of flooding.

Airport North – Substantial floodwater accumulation occurs along the north side of Sky Harbor Airport. Similar to the Cave Creek floodplain, this area is characterized by wide, shallow flooding that extends westward toward I-10. Once the capacity of the storm drain system is exceeded, runoff accumulates and results in a flooding hazard for low-lying properties.



Map of Flood Prone Areas

OLD CAVE CREEK FLOODPLAIN ALTERNATIVES

Storm Drain Alternative

- Provide a 10-year level of protection by increasing the capacity of the storm drain system from the existing 2-year design
- Construct new storm drains in 21st, 15th, 3rd,and Central Avenues
- Estimated cost: $76 million

Storm Drain Alternative with Floodwater Storage at Palo Verde Golf Course

- Provide a 10-year level of protection by increasing the capacity of the storm drain system from the existing 2-year design
- Construct new storm drains in 21st, 15th, 3rd, and Central Avenues
- Reconstruct Palo Verde Golf Course to provide floodwater storage and enhance the playability of the course
- Drain golf course storage into the existing 15th Avenue storm drain
- Estimated cost: $82 million

Floodproofing Alternative

- Elevate residences or provide protective berms around properties
- Estimated cost depends on the number of requests for assistance

No Action Alternative

- No improvements
- Estimated cost: none

CAVE CREEK FLOODPLAIN ALTERNATIVES

Storm Drain Alternative

- Storm drain improvements alone are not feasible for this area given constraints

Storm Drain Alternative with Floodwater Storage at Encanto Golf Course

- Provide a 10-year level of protection by increasing the capacity of the storm drain system from the existing 2-year design
- Construct new storm drains in 18th, 15th,and 3rd Avenues
- Reconstruct Encanto Golf Course to provide floodwater storage and enhance the playability of the course
- Drain golf course storage into the I-10 drainage system
- Estimated cost: $79 million

Floodproofing Alternative

- Elevate residences or provide protective berms around properties
- Estimated cost depends on the number of requests for assistance

No Action Alternative

- No improvements
- Estimated cost: none

Cave Creek and Old Cave Creek Flood Prone Areas

GRAND CANAL ALTERNATIVES

Floodplain Property Acquisition Alternative

- Acquire residences within the boundaries of the Grand Canal floodplain
- Remove residences and resell lots
- Require property owners of resold lots to elevate the lowest floor elevation above the canal bank
- Estimated cost: $79 million

Storage Basins/Parks Alternative

- Acquire residences within the boundaries of the Grand Canal floodplain
- Construct storage basins that would be developed into small parks/open spaces, creating a linear park system along the canal
- Drain storage basins into existing storm drain system
- Estimated cost: $168 million

Floodproofing Alternative

- Elevate residences or provide protective berms around properties
- Estimated cost depends on the number of requests for assistance

No Action Alternative

- No improvements
- Estimated cost: none

Grand Canal Flood Prone Area

ARCADIA/OLD CROSSCUT CANAL WATERSHED ALTERNATIVES

New Storm Drain System – Camelback Road Alternative

- **Provide a 10-year level of protection for the Arcadia/Old Crosscut Canal watershed**
- **Construct new 10-year storm drains in Arcadia Drive; Lafayette Boulevard; and Camelback, Invergordon, and Thomas Roads**
- **Estimated cost: $25 million**

New Storm Drain System – Lafayette Interceptor Alternative

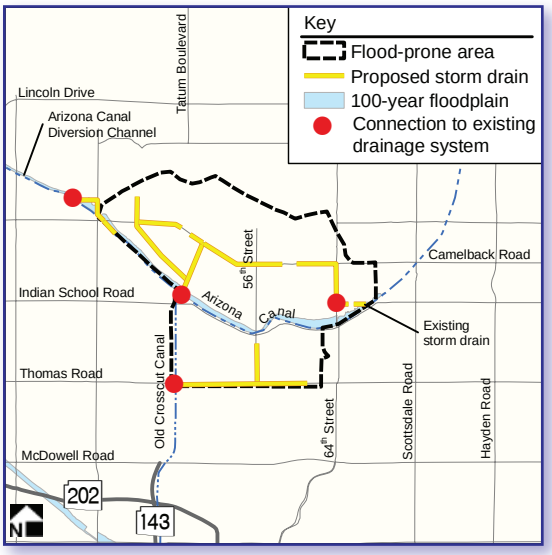
- **Provide a 10-year level of protection for the Arcadia/Old Crosscut Canal watershed**
- **Construct new 10-year storm drains in 56th Street, Arcadia Drive, Lafayette Boulevard, and Osborn and Thomas Roads, and a new 2-year storm drain in Camelback Road**
- **Estimated cost: $26 million**

Floodproofing Alternative

- **Elevate residences or provide protective berms around properties**
- **Estimated cost depends on the number of requests for assistance**

No Action Alternative

- **No improvements**
- **Estimated cost: none**



Arcadia/Old Crosscut Canal Flood Prone Area

DOWNTOWN ALTERNATIVES

Storm Drain Alternative North of Railroad

- Provide a 10-year level of protection by increasing the capacity of the storm drain system from the existing 2-year design
- Use excess capacity of existing storm drains in 19th, 15th, and 11th Avenues and 7th, 12th, and 16th Streets
- Construct new storm drains in 3rd and 9th Avenues and Fillmore Street that drain runoff into the Arizona Department of Transportation's (ADOT) existing drainage facility
- Estimated cost: $31 million

Storm Drain Alternative South of Railroad

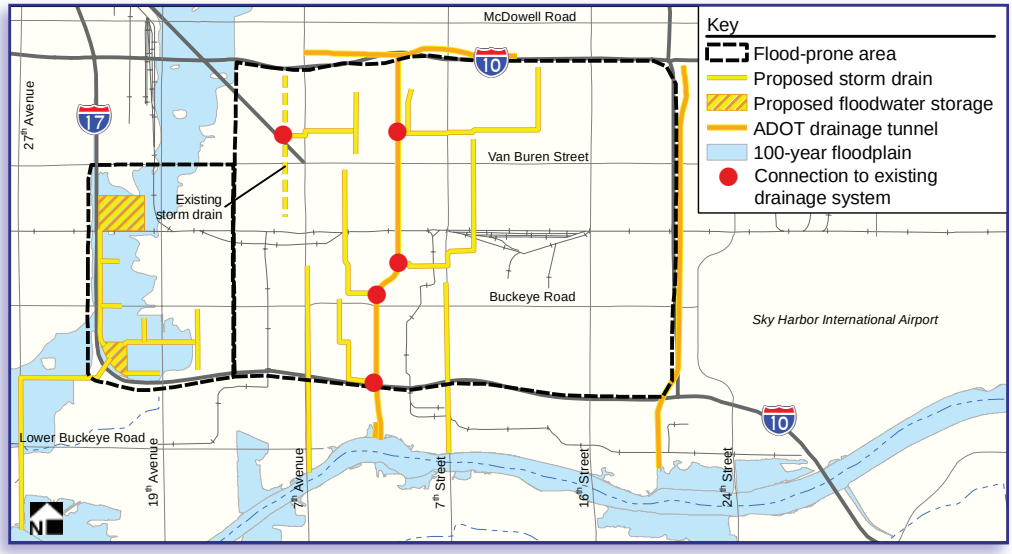
- Provide a 10-year level of protection by increasing the capacity of the storm drain system's from the existing 2-year design
- Use excess capacity of existing storm drains in 15th, 11th, and 7th Avenues
- Construct new storm drains in 7th Avenue and 7th Street that drain runoff into the Salt River
- Construct new storm drain in 3rd Avenue that drains runoff into ADOT's existing drainage facility
- Estimated cost: $18 million

Floodproofing Alternative

- Not considered in this area

No Action Alternative

- No improvements
- Estimated cost: none



Downtown and "Durango Curve" Flood Prone Areas

DURANGO CURVE ALTERNATIVES

100-Year Collection System Alternative

- Provide a 100-year level of protection for the Durango Curve area
- Construct a system of new large-diameter storm drains to collect floodwaters upstream of the Durango Curve
- Construct a new outlet double-barrel box culvert from the Durango Curve to the Salt River
- Estimated cost: $103 million

100-Year Collection System Alternative with Floodwater Storage at Durango Curve

- Provide a 100-year level of protection for the Durango Curve area
- Construct a system of new large-diameter storm drains to collect floodwaters and drain them into a new multi-use floodwater storage basin at the Durango Curve
- Construct a new 102-inch pipe to drain the storage basin into the Salt River
- Estimated cost: $77 million

100-Year Collection System Alternative with Floodwater Storage at Durango Curve and at the Union Pacific Railroad

- Provide a 100-year level of protection for the Durango Curve area
- Construct a system of new large-diameter storm drains to collect floodwaters and drain them into two new multi-use floodwater storage basins: one at the Durango Curve and the other along the north side of the Union Pacific Railroad
- Construct a new 102-inch pipe to drain the storage basins into the Salt River
- Estimated cost: $100 million

Floodproofing Alternative

- Elevate residences or provide protective berms around properties
- Estimated cost depends on the number of requests for assistance

No Action Alternative

- No improvements
- Estimated cost: none

AIRPORT NORTH ALTERNATIVES

Storm Drain Alternative

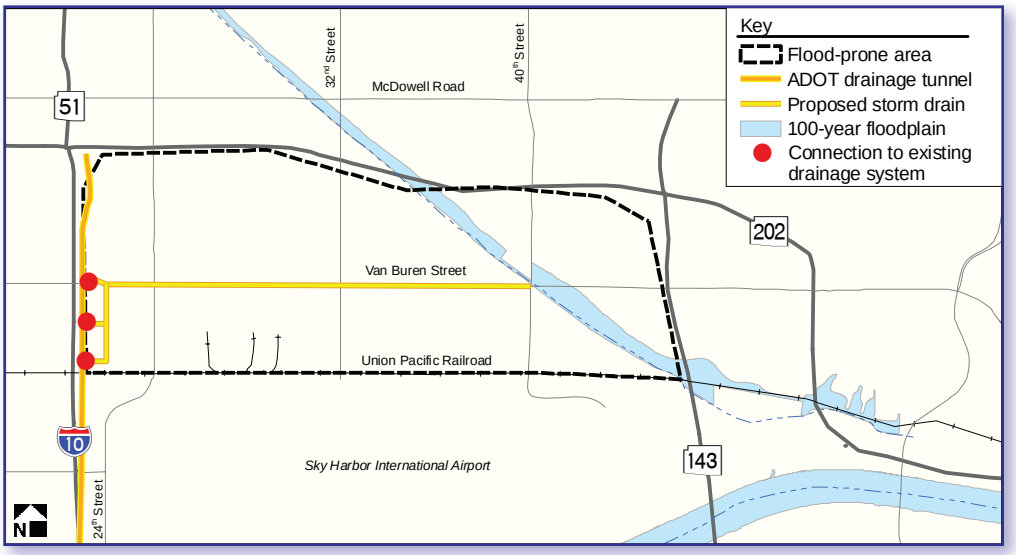
- Provide a 10-year level of protection by increasing the capacity of the storm drain system from the existing 2-year design
- Construct new storm drain in Van Buren Street that drains runoff into ADOT's existing drainage facility
- Intercept flows from the existing storm drains in 24th, 32nd, and 40th Streets
- Allow the Aviation Department to utilize the residual capacity of these three existing storm drains to provide much needed storm drain capacity for the airport
- Estimated cost: $24 million

Floodproofing Alternative

- Not considered in this area

No Action Alternative

- No improvements
- Estimated cost: none



Airport North Flood Prone Areas

Revision of Cave Creek Floodplain- Grand Canal to I-10

The Cave Creek floodplain review indicates that the average depth of floodwaters within the floodplain may not warrant a floodplain designation. In the area upstream of McDowell Road, floodwaters flow over a very wide area, spreading out between 19th Avenue and 7th Street. This wide, shallow flooding does not meet the criteria for a floodplain designation, which usually involves larger-scale, deeper flooding. The District's study results indicate that the floodplain designation can be removed for the area between the Grand Canal and McDowell Road if the designation change is first approved by FEMA. The overall flood risk for the area would not change without flood control measures being constructed regardless of whether or not the floodplain designation is removed. The drainage alternatives presented earlier in this handout are designed to reduce or alleviate the remaining flooding potential within the study area.

Next Steps

The Metro ADMP study team will complete the alternatives analysis, which will include descriptions, cost estimates, opportunities, and constraints of each alternative. Next, the District will schedule a workshop with the Metro ADMP study team to choose the recommended alternatives, incorporating comments received from the public meetings.

Once the recommended alternatives have been chosen, the Metro ADMP study team will further develop the recommended plan. These efforts will include preliminary engineering drawings of the elements of the plan, refined cost estimates for plan implementation, and graphic simulations of the more visible elements, such as reconfiguration of the golf courses and construction of new detention basins. The District will then schedule the final series of public meetings to present the recommended plan to the public.

For More Information, contact:

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