

**Urban Flooding in the United States
Committee Meeting
Hyatt Regency Phoenix
Phoenix, Arizona
January 23, 2018**

PRESENTATIONS

Urban Flooding, Phoenix, Arizona (Jensen and Mushtaq)

Examples of Flooding in Phoenix

- Highline Canal Overtopping: September 8, 2014 storm, 1000 year storm event
- Camelback and 35th Avenue Street Flooding: August 2, 2016, 500 year storm event
- Manhole cover blown at Phoenix airport: August 3, 2017 storm, 100 year storm event

Reasons for Urban Flooding

- Urbanization
- Population growth
- Land use changes
- Impervious areas
- Flat topography
- Intense rainfall
- Soil types

Mitigation Tools

- Floodplain management plan
- Master drainage planning
- Capital improvement projects
- Local drainage program
- Small Projects Assistance Program

Future Actions

- Floodplain management/hazard mitigation plan
- Invest in infrastructure
- Sustainable development
- Building resiliency
- Public trust
- State and federal assistance programs

How Can We Get Help?

- Interagency coordination between NWS, USGS, USACE, FEMA and others regarding urban flooding

- Identify common problems and shared solutions
- Develop and implement policies/regulations to mitigate urban flooding

Flood Control District of Maricopa County (Waters)

Comprehensive Flood Control Philosophy

- Detailed planning, mapping and modeling
- Regulation/management of floodplains
- Cost-sharing and partnering with municipalities
- Overcoming financial and political challenges
- Multi-use flood control facility construction
- Environmental and aesthetic priorities
- Public outreach and education
- Flood information, warning and response

Flood Response Plans

- Established for local jurisdictions or watersheds
- Operated by local jurisdictions or Flood Control District of Maricopa County
- Rely heavily on support from Flood Control District of Maricopa County and the National Weather Service

Arizona DOT Infrastructure Resilience: Blending Risk/Science/Technology/Engineering (Olmsted)

Flood Hydrology in Phoenix

How big of a problem is flooding in Phoenix?

- 1972 Indian Bend Wash flooding Scottsdale, Arizona caused Indian Bend Wash Greenbelt, a linear series of parks, turf areas, and golf courses built
- Significant departure from more traditional concrete lined storm drains

Other major Phoenix area flood control projects constructed and (or) maintained primarily by Flood Control District of Maricopa County

- Arizona Canal Diversion Channel
- East Maricopa Floodway,
- Cave Buttes and Adobe Dams

Arizona experiences between 40 and 100 floods each year

Arizona has experienced 116 severe floods since 2010

Phoenix metro has annual measurable occurrences

Arizona DOT Resilience Program (Initial Focus)

Since ADOT has had a long history considering the balance between predictable asset deterioration curves and the unknown, erratic, and abrupt incidents of flood, overtopping, system hotspots, hydraulic-related failure, and extreme weather impacts, these topics were identified to make up the core of the

pilot program. Three areas of vexing concern for state DOTs and the main catalyst for developing an ADOT Resilience Program involve how to:

1. Centralize to one operating area the unknown, erratic, and abrupt incidents of stormwater and its contributors of flooding, overtopping, system hotspots, hydraulic-related failures
2. Introduce extreme weather adaptation to agency and engineering design processes and establish transportation asset sensitivity to extreme weather
3. Handle scientifically-informed climate data downscaling as it relates to transportation systems