



City of Phoenix

JURISDICTIONAL SUMMARY

FOR THE

CITY OF PHOENIX

**MARICOPA COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN
2021**



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Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. With 62 federal or state declarations and a total of 980 other recorded events, the 26 jurisdictions contained within Maricopa County, Arizona and participating in this planning effort recognize the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards. The County and jurisdictions also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards.

The elected and appointed officials of Maricopa County and the 25 other participating jurisdictions demonstrated their commitment to hazard mitigation in 2015 by preparing the second update of the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (2015 Plan). The 2015 Plan covered 28 participating jurisdictions and was approved by FEMA on December 22, 2015. In order to remain compliant with the congressional regulations, the county and jurisdictions must perform full plan update and obtain FEMA approval. It is noted that the Salt River Project and the Town of Paradise Valley are no longer participants in the updated Plan.

In response, the Maricopa County Department of Emergency Management (MCDEM) secured a federal planning grant and hired JE Fuller/ Hydrology & Geomorphology, Inc. to assist the County and participating jurisdictions with the update process. MCDEM reconvened a multi-jurisdictional planning team (MJPT) comprised of veteran and first-time representatives from each participating jurisdiction, and other various county, state, and federal departments and organizations such as the National Weather Service and Arizona Public Service. The MJPT met monthly beginning in July 2020 and finishing in November 2020. Subsequent “catch up” meetings were conducted through June 2015 to assist several communities with finalizing assignments and the first draft of the updated 2021 Plan was issued in July September 2021. The meetings and MJPT worked in a collaborative effort to review, evaluate, and update the 2015 Plan keeping the single, consolidated multi-jurisdictional plan format and approach. The 2021 Plan will continue to guide the County, tribes and participating local jurisdictions toward greater disaster resistance in full harmony with the character and needs of the community and region.

The Plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), 42 U.S.C. 5165, as amended by Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) Public Law 106-390 enacted October 30, 2000. The Plan includes risk assessments for multiple natural hazards, a public outreach effort at two phases of the planning process, and development of a mitigation strategy that incorporates measures intended to eliminate or reduce the effects of future disasters throughout the County. The development of the various 2021 Plan elements was accomplished through a joint and cooperative venture by members of the Maricopa County MJPT, with MCDEM serving as the lead agency and primary point of contact for the planning effort.

The overall purpose of DMA 2000 was to establish a national program for pre-disaster mitigation, streamline administration of disaster relief at both the federal and state levels, and control federal costs of disaster assistance. Congress envisioned that implementation of these new requirements would result in the following key benefits:

- Reduction of loss of life and property, human suffering, economic disruption, and disaster costs.
- Prioritization of hazard mitigation planning at the local level, with an increased emphasis placed on planning and public involvement, assessing risks, implementing loss reduction measures, and ensuring that critical services/facilities survive a disaster.
- Establishment of economic incentives, awareness and education via federal support to state, tribal, and local governments that will result in forming community-based partnerships, implementing effective hazard mitigation measures, leveraging additional non-Federal resources, and establishing commitments to long-term hazard mitigation efforts.



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In general, the DMA 2000 legislation requires all local, county, and tribal governments to develop a hazard mitigation plan for their respective communities in order to be eligible to receive certain federal non-emergency mitigation funds including Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities Program (BRIC) [Formerly Pre-Disaster Mitigation Program (PDM)]. FEMA's Flood Mitigation Assistance Program (FMA) planning requirements are also satisfied by this plan as long as flooding is addressed.

In satisfying the regulatory requirements of DMA 2000, the primary purpose of this plan is to identify natural hazards that impact Phoenix, assess the vulnerability and risk posed by those hazards to community-wide human and structural assets, develop strategies for mitigation of those identified hazards, present future maintenance procedures for the plan, and document the planning process. The Plan is generally arranged and formatted to be consistent with the 2018 State of Arizona Multi-Hazard Mitigation Plan (State Plan) and is comprised of the following major sections:

Planning Process – this section summarizes the planning process used to update the Plan, describes the assembly of the planning team and meetings conducted, and summarizes the public involvement efforts.

Community Description – this section provides an overall description of the participating jurisdictions and the County as a whole.

Risk Assessment – this section summarizes the identification and profiling of natural hazards that impact the County and the vulnerability assessment for each hazard that considers exposure/loss estimations and development trend analyses.

Mitigation Strategy – this section presents a capability assessment for each participating jurisdiction and summarizes the Plan mitigation goals, objectives, actions/projects, and strategy for implementation of those actions/projects.

Plan Maintenance Strategy – this section outlines the proposed strategy for evaluating and monitoring the Plan, updating the Plan in the next 5 years, incorporating plan elements into existing planning mechanisms, and continued public involvement.

Plan Tools – this section includes a list of Plan acronyms and a glossary of definitions.

The planning process used to review and update the 2015 Plan included the organization and use of two planning team levels. The first was a Multi-Jurisdictional Planning Team (MJPT) that was comprised of one or more representatives from each participating jurisdiction. The second was the Local Planning Team (LPT) that was comprised of various staff and officials from the specific jurisdiction.

The role of the MJPT was to work with the planning consultant to perform the coordination, research, and planning element activities required to update the 2015 Plan. Attendance by each participating jurisdiction was required for every MJPT meeting as the meetings were structured to progress through the plan update process. Steps and procedures for updating the 2015 Plan were presented and discussed at each MJPT meeting, and worksheet assignments were normally given. Each meeting built on information discussed and assignments made at the previous meeting. The MJPT representatives also had the responsibility of being the liaison to the LPT, and were tasked with the following:

- Conveying information and assignments received at the MJPT meetings to the LPT
- Ensuring that all requested worksheets were completed fully and returned on a timely basis
- Arranging for review and official adoption of the Plan

The function and role of the LPT was to:

- Provide support and data
- Assist the MJPT representative in completing each assignment
- Make planning decisions regarding plan update components
- Review the Plan draft documents

The MJPT met five times from July 2020 to November 2020, with LPT meetings convened in between as needed to complete the homework and review/update tasks assigned.



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The following are the contact details for the Plan primary point of contact for the City of Phoenix:

Kim Gathers
Interim Deputy Director
Office of Homeland Security & Emergency Management
200 W. Washington Street
Phoenix, AZ 85003
Work: 602.534.9223
Email: kim.gathers@phoenix.gov

For information purposes, the following summarizes contact details for the Plan primary point of contact for Maricopa County:

Rudy Perez
Senior Planner
Maricopa County Department of Emergency Management
5636 E. McDowell Rd.
Phoenix, AZ 85008
Work: 602.273.1411
Email: rudy.perez@maricopa.gov

The following table summarizes the LPT for Phoenix and roles of each person. The promulgation authorities are listed at the end of the table.

Name	Department / Division / Branch	Title	Planning Team Role / Description of Duties
Kim Gathers	City Managers Office	Interim Deputy Director	Jurisdictional Point of Contact
Brent Olson	Phoenix Office of Homeland Security and Emergency Management	Director	Local Planning Team Participant
Antonio Shin	Phoenix Office of Homeland Security and Emergency Management	Emergency Planner	Local Planning Team Participant
<i>PROMULGATION AUTHORITY</i>			
Kate Gallego	City Council	Mayor	Plan Promulgation
Carlos Garcia	City Council	Vice Mayor	Plan Promulgation
Ann O'Brien	City Council	Council Member	Plan Promulgation
Jim Waring	City Council	Council Member	Plan Promulgation
Debra Stark	City Council	Council Member	Plan Promulgation
Laura Pastor	City Council	Council Member	Plan Promulgation
Betty Guardado	City Council	Council Member	Plan Promulgation
Sal DiCiccio	City Council	Council Member	Plan Promulgation
Yassamin Ansari	City Council	Council Member	Plan Promulgation



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One of the key elements to the hazard mitigation planning process is the risk assessment. In performing a risk assessment, a community determines “what” can occur, “when” (how often) it is likely to occur, and “how bad” the effects could be. According to DMA 2000, the primary components of a risk assessment are generally categorized into the following measures:

- Identify Hazards**
- Profile Hazard Events**
- Assess Vulnerability to Hazards**

The risk assessment for Phoenix utilized information developed by the LPT and Countywide hazard profile data. The vulnerability analysis results reported in the Plan reflect vulnerability at the community level as well as on a County-wide basis.

Following the lead of the State of Arizona, only natural hazards were considered for this update. The list of hazards in the 2015 Plan and the 2018 State Plan¹ were reviewed and compared in an initial screening that used a systematic process that considered relevance, historical significance and experience, and catastrophic potential. The result was a list of hazards that are most relevant to Maricopa County. The Phoenix LPT further reviewed the list to reflect only those hazards that have the most impact on Phoenix. The following table summarizes the Countywide list of hazards. The hazards selected for mitigation by Phoenix are shown in bold type.

Natural Hazard List for the Plan and Phoenix	
<ul style="list-style-type: none"> • Dam Inundation • Drought • Extreme Heat • Fissure • Flood 	<ul style="list-style-type: none"> • Levee Failure • Severe Wind • Subsidence • Wildfire

Profiles were developed for each of the hazards by researching and mapping historic hazardous events, obtaining other hazard mapping, analysis and studies, and in Arizona, estimating the Calculated Priority Risk Index (CPRI)². Hazard profile maps for Dam Inundation (Emergency Spillway and Dam Failure), Fissure, Flooding/Flash Flooding, Levee Failure, Subsidence, and Wildfire were developed. Maps specific to Phoenix are provided following the text of this summary.

A vulnerability analysis was performed to assess and evaluate the City’s population and critical facility exposure risk to the identified hazards. The risk was tabulated in terms of exposure loss estimates and human population exposure. Critical facilities were individually identified by the MJPT and LPT and supplemental residential facility information was obtained from the 2010 census block residential unit data set. It is estimated that there are at least \$7.8 billion dollars³ worth of critical and non-critical facilities within Phoenix. Replacement value for residential buildings within Phoenix are estimated to total over \$167.5 billion. The 2015 City population estimate is 1,561,296. The following table summarizes the general results of the vulnerability analysis for each of the top hazards in the City.

¹ State of Arizona, Division of Emergency Management, 2018, *State of Arizona Multi-Hazard Mitigation Plan*.

² The CPRI is explained in detail in the Section 5.2.3 of the main Plan

³ This estimate is likely to be inexact as there were many assets that the community was unable to obtain detailed replacement estimates for the Plan development schedule.



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Hazard	Exposure Estimates ^a		
	Critical Facilities	Residential	Population ^b
Dam Failure (High Hazard)	\$0	\$0	0
Drought	(None estimated)		1,561,296
Extreme Heat	(None estimated)		1,561,296
Fissure (High Hazard)	\$0	\$32.8 million	214
Flooding (High Hazard)	\$111.5 million (15 Structures)	\$3.4 billion	34,577
Levee Failure (High Hazard)	\$37.5 million (6 Structures)	\$1.7 billion	12,915
Severe Wind	(None estimated)		1,561,296
Subsidence	\$552.2 million (113 Structures)	\$27 billion	314,904
Wildfire (High Hazard)	\$954.6 million (37 Structures)	\$7.1 billion	61,284
^a – These numbers represent estimates of exposure that may result assuming all delineated hazard areas are impacted at the same time. Actual event losses may not impact the entire area during a single event. ^b – These numbers represent the total human population potentially exposed to the hazard.			

The MJPT and Phoenix LPT developed a strategy for mitigating the hazard risks identified within the City. The mitigation strategy provides the “*what, when, and how*” of actions that will reduce or possibly remove the City’s exposure to hazard risks, and is generally categorized into the following components:

- Goals and Objectives**
- Capability Assessment**
- Mitigation Actions/Projects**
- Implementation Strategy**

The MJPT reviewed and discussed the 2015 Plan goals and objectives and compared them to the 2018 State Plan. The result of the discussions resulted in establishing one goal and four clear objectives as follows:

- **GOAL:** Reduce or eliminate the risk to people and property from natural hazards.
 - ◆ **Objective 1:** Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and tribal jurisdictions within Maricopa County.
 - ◆ **Objective 2:** Reduce risk to critical facilities and infrastructure from natural hazards.
 - ◆ **Objective 3:** Promote hazard mitigation throughout the incorporated, unincorporated, and tribal jurisdictions within Maricopa County.
 - ◆ **Objective 4:** Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and tribal jurisdictions within Maricopa County.

This goal and four objectives will be used by all participating jurisdictions in the Plan

The Phoenix LPT reviewed and updated the community’s capability assessment regarding legal, regulatory, technical/staff, and financial resources. The following tables summarize the results:



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Legal and regulatory capabilities for Phoenix		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> • 2016 ASME • 2017 National Electrical Code • 2018 International Building Code Administrative Provisions • 2018 International Building Code • 2018 International Energy Conservation Code • 2018 International Existing Building Code • 2018 International Fire Code • 2018 International Fuel Gas Code • 2012 International Green Construction Code • 2018 International Mechanical Code • 2018 International Residential Code • 2018 International and Uniform Plumbing Codes • Arizona Administrative Code, Title 12, Chapter 15 (AAR-R12-15-1206/1219) • Phoenix City Code, Chapter 32A (Grading & Drainage), 32B (Floodplains), and 32C (Stormwater Quality Protection) 	<ul style="list-style-type: none"> • Fire • Planning & Development • Public Works • Street Transportation • Water Services
ORDINANCES	<ul style="list-style-type: none"> • Phoenix City Codes & Ordinances 	<ul style="list-style-type: none"> • Law • Planning & Development
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> • 2015 Phoenix General Plan (Scheduled for completion in Spring 2015) • 2009 City of Phoenix Major Emergency Response and Recovery Plan • 2015 Maricopa County Regional Multi-Hazard Mitigation Plan • 2013 Water Services Department Design Standards Manual for Water and Wastewater Systems • 2013 Street Transportation Department Storm Water Policies and Standards (3rd Edition) • 2019 Aviation Department Multi-Sector General Permit Stormwater Pollution Prevention Plan • Aviation Department Wildlife Management Plan • Aviation Department Rules and Regulations • Greater Phoenix Metro Area GSI/LID Handbook • Metro Phoenix Area Drainage Master Plan • Hohokam Area Drainage Master Plan • Water Services Facility Stormwater Management Plans • Water Services Facility Stormwater Pollution Prevention Plans 	<ul style="list-style-type: none"> • Aviation • Office of Homeland Security and Emergency Management • Office of Environmental Programs • Planning Development • Public Works • Water Services • Street Transportation



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Legal and regulatory capabilities for Phoenix		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
STUDIES	<ul style="list-style-type: none"> • 2015 City of Phoenix Threat and Hazard Identification and Risk Assessment • 7R/25L Runway Safety Area Environmental Assessment – Conditional Letter of Map Revision • Dam Safety Studies and Emergency Action Plans • FEMA DFIRM Maps • Flood Insurance Studies (FIS) • Levee Studies and Recertification • Recommendations for Integrating Green Infrastructure into the Maricopa County Multi-jurisdictional Hazard Mitigation Plan 	<ul style="list-style-type: none"> • Aviation • Office of Environmental Programs • Office of Homeland Security and Emergency Management • Public Works • Street Transportation
<p><u>Opportunities for Expansion/Improvement:</u> Building and planning codes could be improved to better accommodate flooding, drought, and extreme heat. Incentives for green stormwater infrastructure/low impact development approaches to construction could make these options more attractive and provide increased protection for the most vulnerable population. Additional policies to the long-term plan could allow for improved standards and guidance to protect natural drainage areas and options for low impact development strategies.</p>		

Technical staff and personnel capabilities for Phoenix		
Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Street Transportation Dept. – Deputy Director, Special Projects Administrator, Principal Planner, Civil Engineers, Project Manager, Principal Engineering Technicians, Chief Engineering Technicians; Public Works Dept. – Assistant Director, Civil Engineer III
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Street Transportation Dept. – Deputy Director, Special Projects Administrator; Public Works Dept. – Assistant Director, Civil Engineer III; Planning & Development Department – Deputy Directors, Building Official, Plans Engineers
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Street Transportation – Deputy Director, Special Projects Administrator, Principal Planner, Civil Engineer II; Office of Emergency Management – Director, Deputy Director, Planner; Public Works Dept. – Assistant Director, Civil Engineer III
Floodplain Manager	<input checked="" type="checkbox"/>	Street Transportation Dept. – Principal Planner, Civil Engineer II, Senior Engineering Technician, Principal Engineering Technician; Public Works Dept. – Assistant Director, Civil Engineer III
Surveyors	<input checked="" type="checkbox"/>	Street Transportation Dept. – Survey Teams
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Office of Emergency Management – Director, Deputy Director, Planner; Planning and Development Dept. – Deputy, Planner III, Planner II, Planner I; Fire Dept. - Batalion Chief, Captain, Fire Fighter



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Technical staff and personnel capabilities for Phoenix		
Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Information Technology Services – Info Tech Analyst/Programmers and Info Tech Specialists Fire Dept. – Fire Protection Engineer Planning Development Dept. – Senior GIS Technician Police Dept. – Senior User Technology Specialist Street Transportation Dept. - Info Tech Analyst/ Programmer II and Senior GIS Technician Water Services Dept. – GIS and Senior GIS Technicians
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	City Manager’s Office, Office of Environmental Programs – Environmental Programs Coordinators and Environmental Quality Specialists
Emergency manager	<input checked="" type="checkbox"/>	City Manager’s Office - Emergency Management Director
Grant writer(s)	<input checked="" type="checkbox"/>	Aviation Department – Planner II Fire Dept. – Volunteer Coordinator and Fire Captains Planning Development Dept. – Principal Planner, Planner III, Village Planner & Planner II Police Dept. – Police Research Analysts Public Transit Dept Office of Emergency Management – Management Assistant, Fire Dept. – Management Assistant II, Street Transportation Dept. – Management Services, Public Works Dept.
<p><u>Opportunities for Expansion/Improvement:</u> Emergency Management, Street Transportation and Public Works could implement joint programs that educate the community on floodplain preparedness-living in a floodplain area; how to prepare, what to do to minimize the effects, when to take necessary steps; and flood insurance to protect your assets. Emergency Management, Human Services, Neighborhood Services, Fire/Medical, Office of Sustainability, and Housing could implement programs that educate the community on A/C maintenance and temperature control and provide A/C inspections for the most vulnerable populations to ensure operability prior to extreme heat season.</p>		

Fiscal capabilities for Phoenix		
Financial Resources	Accessible or Eligible to Use (Yes, No, Don’t Know)	Comments
Community Development Block Grants	Yes	Housing, Neighborhood Services, and Water Services projects
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Water, Sewer, and Solid Waste Fees/Rates
Impact fees for homebuyers or new developments/homes	Yes	For new developments inside impact fee areas-zones only. The Impact Fees are charged to new developments.
Incur debt through general obligation bonds	Yes	This excludes the Water Services and Aviation Departments
Incur debt through special tax bonds	Yes	Excise (sales) taxes



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Other	Yes	FAA and Arizona Dept of Transportation grants to the Aviation Department Water resources fees, Environmental fees, Improvement Districts
<p><u>Opportunities for Expansion/Improvement:</u> The city can increase its focus on grant applications through FEMA mitigation grants by implementing a hazard mitigation program that identifies priority projects three years in advance and incorporates the grant application process into the annual review of the hazard mitigation plan. This would allow proper time to collaborate amongst the various departments and gather information needed for a successful grant application on an annual basis and determine if specific projects qualify for other grant funding to ensure adequate funding to meet the highest need.</p>		

Using the vulnerability analysis, capability assessment, and goals and objectives, the Phoenix LPT then developed an updated list of mitigation actions/projects with an implementation strategy clearly defined. Each action/project was evaluated and prioritized based on: 1) Direct Impact on Life and/or Property; 2) Long-Term Solution; and 3) Benefit vs. Cost. The table on the following page summarizes the updated mitigation action/project list for Phoenix.



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Mitigation actions and projects and implementation strategy for Phoenix									
Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood, Dam Inundation,	Both	Staff Time	High	Staff Training, Plan Review	Annual-Ongoing	Public Works / Floodplain Manager	General Funds
2	Continue to include in the General Plan policies that protect the natural flow regime of washes, designate areas for Open Space and Preserves, and when fiscally possible support the use of green stormwater infrastructure/low impact development to address multiple risks.	Flood, Dam Inundation, Extreme Heat, Drought	Both	Staff time	High	Land acquisition and natural resource protection	Annual - ongoing	Parks and Recreation / PPPI Administrator	Phoenix Parks Preserves Initiative; General Fund; Bonds
3	Storm Drain CIP Program. Construct drainage facilities to mitigate flooding hazard to residents of the city.	Flood, Levee Failure	Both	Variable	High	Staff Training, Plan Review, Design and Construction	Ongoing	Street Transportation Department/ Deputy Street Transportation Director	Bonds/Impact Fees
4	Coordinate review and approval of development projects located within flood hazard areas with PDD and Floodplain Management.	Flood, Extreme Heat	Both	Staff time	High	GIS	Annual - ongoing	Planning and Development Department / Planning Researcher	Enterprise
5	Summer Respite regional program to network with faith-based organizations to provide heat relief, hydration and respite with wellness checks. Program services are provided for the affected populations.	Extreme Heat	N/A - people	Donations totaling \$70,000 annually	High	Heat Relief Network	Annual - ongoing	Human Services/Family Advocacy Director	Corporate, Community, and faith-based contributions
6	Maintain and execute the Drought Response Plan (Revision in Draft - No Ordinance Change)	Drought	Both	Staff Time	Medium	Master Plan Update and Water Resource Plan Update	Ongoing	Water	WSD Operating Budget
7	Maintain and execute a water use awareness outreach program.	Drought	Both	Staff Time	Medium	Master Plan Update, Water Resource Plan Update, Drought Response Plan	Ongoing	Water	WSD Operating Budget



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8	Revise and ratify the General Plan every ten years.	Flood	Both	Staff time	Medium	State statute; Smart Growth Requirement	Ongoing	Planning and Development Department/ Planning Manager	General Fund
9	Update and adopt a revised building code.	Flood, Severe Wind, Excessive Heat	Both	Staff time; Materials	Medium	Staff training; Community Outreach; Plan review	Annual - ongoing	Planning and Development Department / Assistant Director	Permit fees
10	Continue to ensure zoning stipulations are met before construction permits are issued, and zoning is compatible with the zoning ordinance.	Flood, Excessive Heat	Both	Staff time	Medium	Zoning Ordinance; Staff training; Plan review	Annual - ongoing	Planning and Development Department / Deputy Director	Permit fees
11	Dam/Levee Safety Program – Operate and Maintain Dams/Levees to mitigate flooding hazard to the residents of the city.	Flood, Dam Inundation, Levee Failure	Both	Staff Time, Materials	Medium	Staff Training, Plan Review	Annual - Ongoing	Street Transportation Department / Deputy Street Transportation Director	General Funds
12	Continue to provide links on the Phoenix.gov/Office of Emergency Management website to sources of hazard mitigation educational materials such as FEMA.gov and Ready.gov	Dam Inundation, Drought, Flood, Severe Wind, Wildfire	Both	Staff Time	Medium	N/A	Annual - ongoing	Office of Homeland Security and Emergency Management, City of Phoenix IT	General Funds
13	Continue to adhere to the City of Phoenix Building Standards and Review Process, which are regularly updated. The Building and Review Process requires site assessment for presence of, among other conditions, subsidence and fissures.	Subsidence, Fissure	Both	Staff Time	Medium	Staff Training, Plan Review, Design and Construction	Annual - ongoing	Street Transportation Department: Design and Construction Management	General Funds



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14	Enforce City Ordinance 39-7D, which addresses overgrown vegetation, dead trees, brush and weeds or other conditions that present a health, fire or safety hazard.	Wildfire	Both	Staff Time	Medium	Staff Training, Zoning Ordinance with Neighborhood Preservation Ordinance	Annual – Ongoing	Neighborhood Services Department: Deputy Director, Preservation Division	General Funds, Community Development Block Grant
15	Coordinate with private companies and public agencies to study and map subsidence and fissure activity in critical or key areas of the community so that effective mitigation or avoidance strategies can be implemented.	Subsidence, Fissure	Both	Staff Time	Low	Staff Training, Plan Review, Design and Construction	Annual - ongoing	Street Transportation Department: Design and Construction Management	General Funds
16	Design and construct Rio Salado Oeste in Salt River (19th Ave-83rd Ave), including low flow channel improvements and riparian/xeri-riparian vegetation to improve flow conveyance and increase native vegetation/habitat.	Flooding and extreme heat	Both	Staff time, design and construction expenses	High	Rio Reimagined, land acquisition, design and construction	2030	Parks and Recreation Department/Natural Resource Division Deputy Director	TBD; anticipated USACE Civil Works project funds and local city match
17	The “Take a Hike do it Right” Outreach Program aims to educate the general public, including visitors and resort/hotel staff, on hike/trail selection and hiking safety to avoid heat related illnesses.	Extreme heat	Both	Staff time	High	Reincorporate original marketing strategies and enhance effort to wider audience	On going	Parks and Recreation Department/Natural Resource Division Deputy Director	TDB: Grants and possible funding from tourism related sources
18	Provide shade coverage at all City of Phoenix Bus Stops to shelter riders from excessive sunlight and extreme heat. Of the 4050 bus stops in Phoenix, 1500 of them still require shading structure. The T2050 plan will also implement a new bus shelter design to improve shading options for mitigating heat/sun issues for west-facing bus stops.	Extreme Heat	Both	\$20M (additional \$1M per year for maintenance and repair)	High	Public Transit Department's T2050 Plan	2025	Public Transit Department/Facilities Deputy Director	T2050



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19	Increase frequency of bus routes around vulnerable communities (highest ridership, low income, minority) to minimize exposure to extreme heat while waiting for public transit.	Extreme Heat	Both	\$270M for Operating Service; \$55M for the additional buses and replacement buses	High	Public Transit Department's T2050 Plan	2025	Public Transit Department/Facilities Deputy Director	T2050
20	Implement a notification system for Downtown Phoenix businesses to raise hazard awareness and provide advanced warning of potential threats in the area.	All Hazards	Both	TBD, plan to put out RFP Q2 2021	High	Downtown Phoenix Business Master Plan	2022	Downtown Phoenix Partnership/Strategy and Community Affairs	TBD



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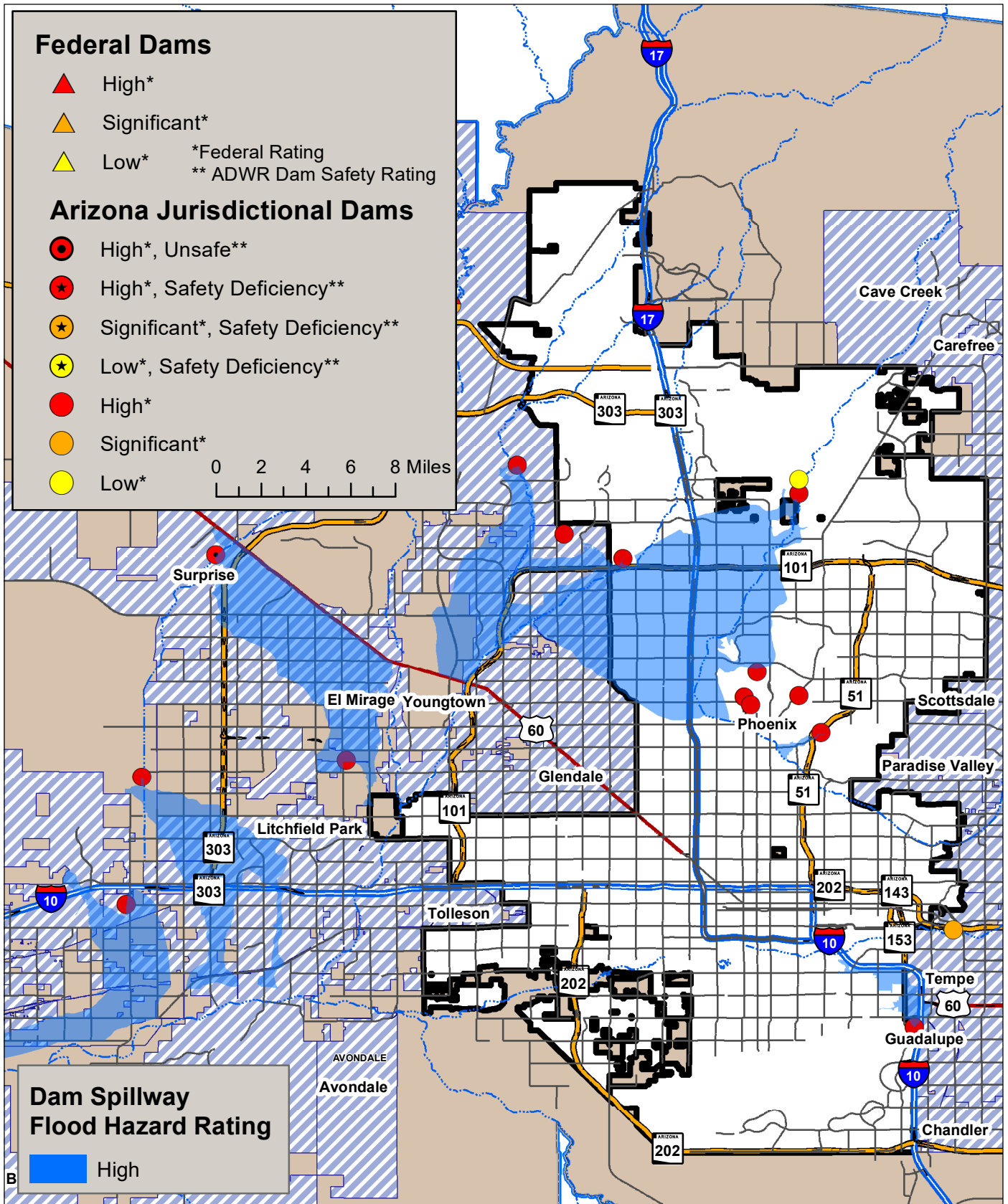
As a final step in the planning process, plan maintenance procedures were developed by the MJPT to establish guidelines for maintaining, reviewing, and updating the Plan over the next five (5) years. The MJPT reviewed the current DMA 2000 rules and October 2011 FEMA guidance document and discussed a strategy for performing the required monitoring and evaluation of the Plan over the next 5-year cycle. The MJPT has established the following monitoring and evaluation procedures:

- **Schedule** – The Plan shall be reviewed on at least an annual basis. MCDEM will take the lead to send out an email request to each jurisdiction via the MJPT on or around the month of May.
- **Review Content** – Within the email request distributed by MCDEM, each of the jurisdictions will be requested to provide responses to the following questions:
 - **Hazard Identification:** *Have the risks and hazards changed?*
 - **Goals and Objectives:** *Are the goals and objectives still able to address current and expected conditions?*
 - **Policy and Program Review:** *Are updates or revisions necessary for the policies and programs listed in Tables 6-1-xx of the Plan?*
 - **Mitigation Projects and Actions:** *For each mitigation action/project summarized in Section 6.3.2 of the Plan:*
 - *Has there been activity on the project – Yes or No?*
 - *If Yes, briefly describe what has been done and the current status of the action/project.*
- **Documentation** – Each jurisdiction will review and evaluate the Plan as it relates to their community and document responses to the above questions in the form of an email. MCDEM will archive email responses in a digital format and store with the Plan for incorporation during the next Plan update. Any hard copies will be included in Appendix E.

A formal presentation of the review material will be presented to a jurisdiction’s council or board only if a major update to the Plan is proposed prior to the next five year update.

At the five year update, the following actions will be taken:

- ✓ One year prior to the plan expiration date, the MJPT will re-convene to review and assess the materials accumulated in Appendix E of the Plan.
- ✓ The MJPT will update and/or revise the appropriate or affected portions of the plan and produce a revised plan document.
- ✓ The revised plan document will be presented before the respective councils and boards for an official concurrence/adoption of the changes.
- ✓ The revised plan will be submitted to DEMA and FEMA for review, comment and approval.

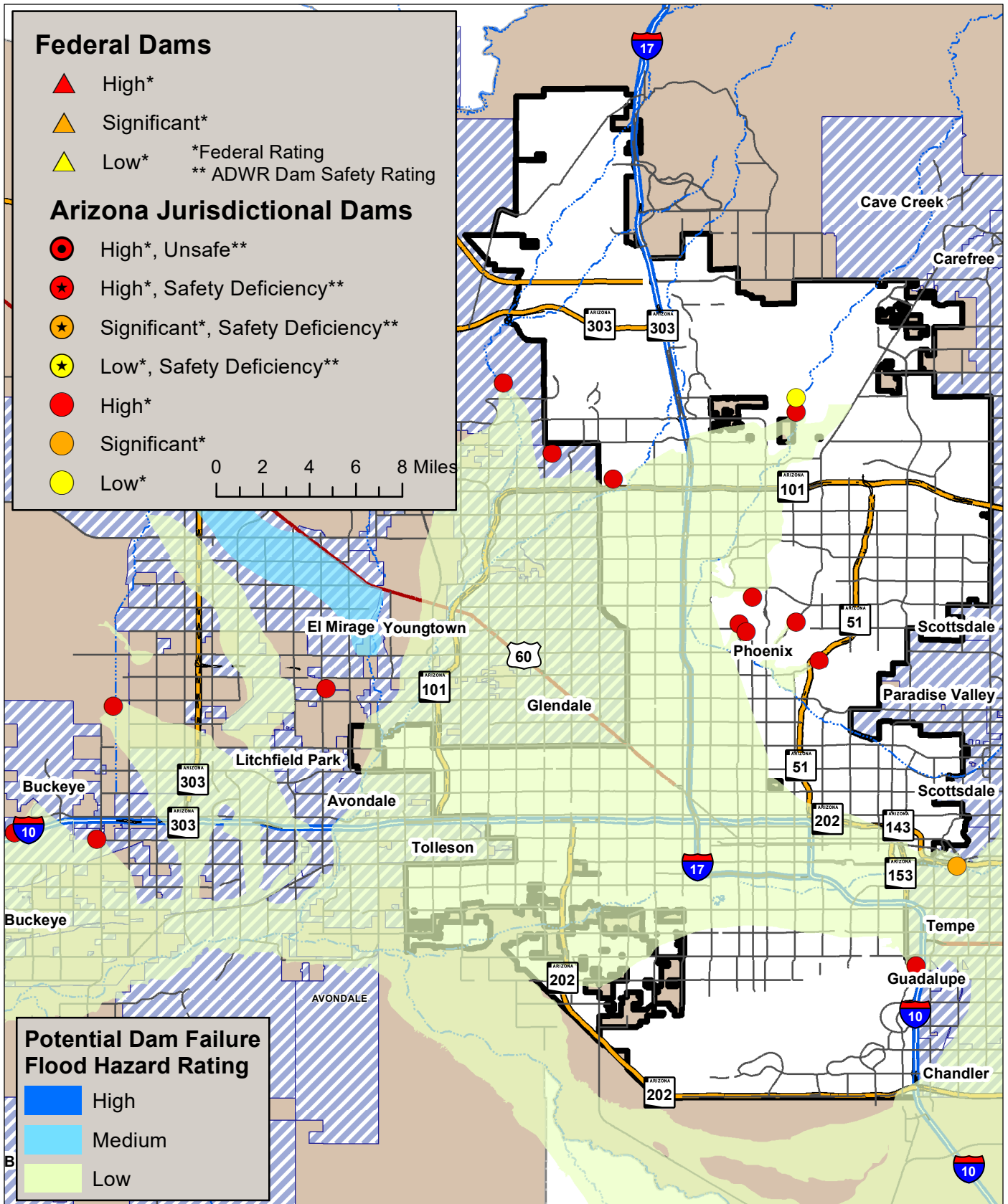


Legend

- Major Streams
- Phoenix
- Other Communities
- Maricopa County
- Interstate Freeway
- US Highway
- State Route
- Major Road
- Ramp

Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

Map #1D18
City of Phoenix
Dam Spillway Flood Hazard Map
as of Sept 2020



Legend

- Major Streams
- Major Roads
- Interstate Freeway
- US Highway
- State Route
- Major Road
- Ramp

Community

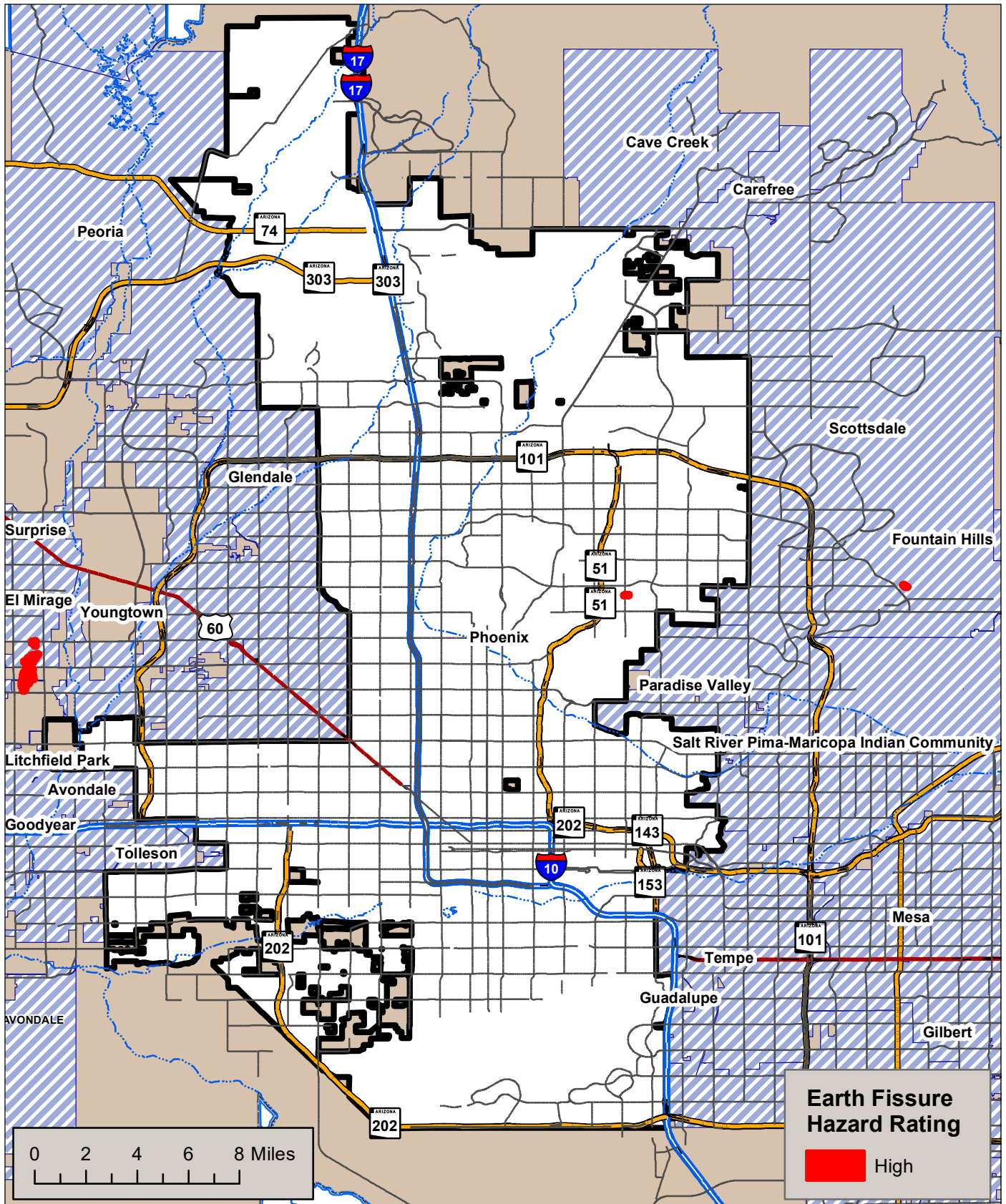
- Phoenix
- Other Communities
- Maricopa County

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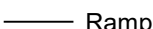
Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

City of Phoenix

Map #2D18
City of Phoenix
Potential Dam Failure Flood Hazard Map
as of Sept 2020



Legend

	Maricopa County		Interstate Freeway
	Phoenix		US Highway
	Other Communities		State Route
	Major Streams		Major Road
			Ramp

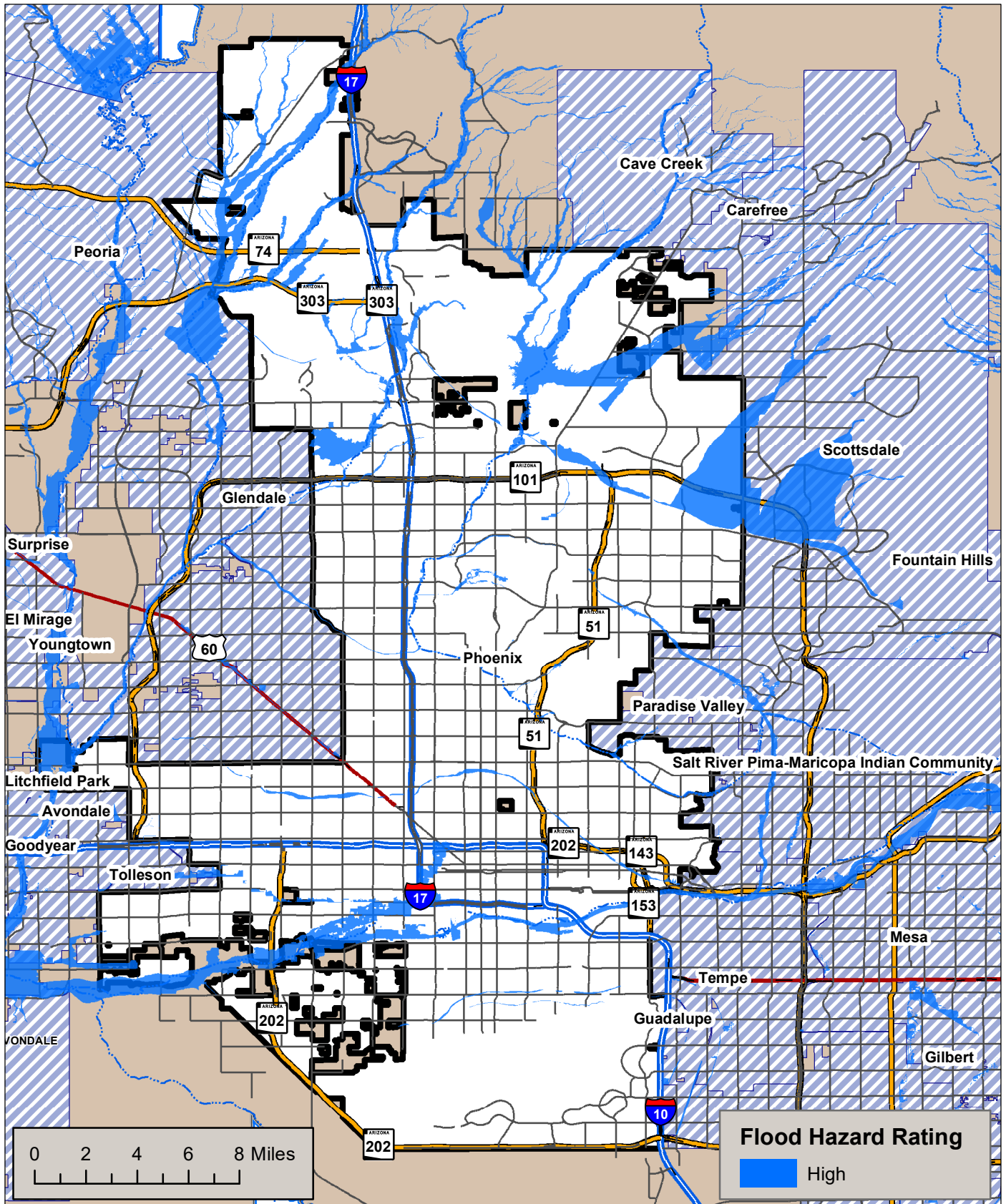
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Maricopa County Multi-Jurisdictional Hazard Mitigation Plan




City of Phoenix

Map #3D18
City of Phoenix
Earth Fissure Hazard Map
as of Sept 2020





Legend

	Major Streams		Interstate Freeway
	Phoenix		US Highway
	Other Communities		State Route
	Maricopa County		Major Road
			Ramp

N

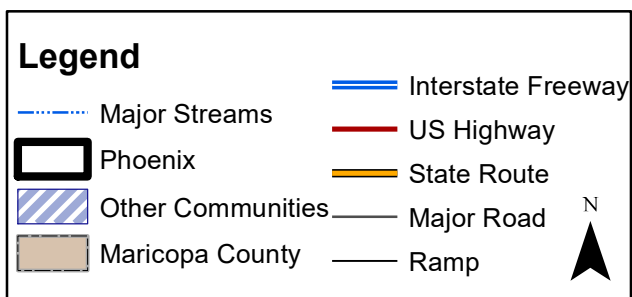
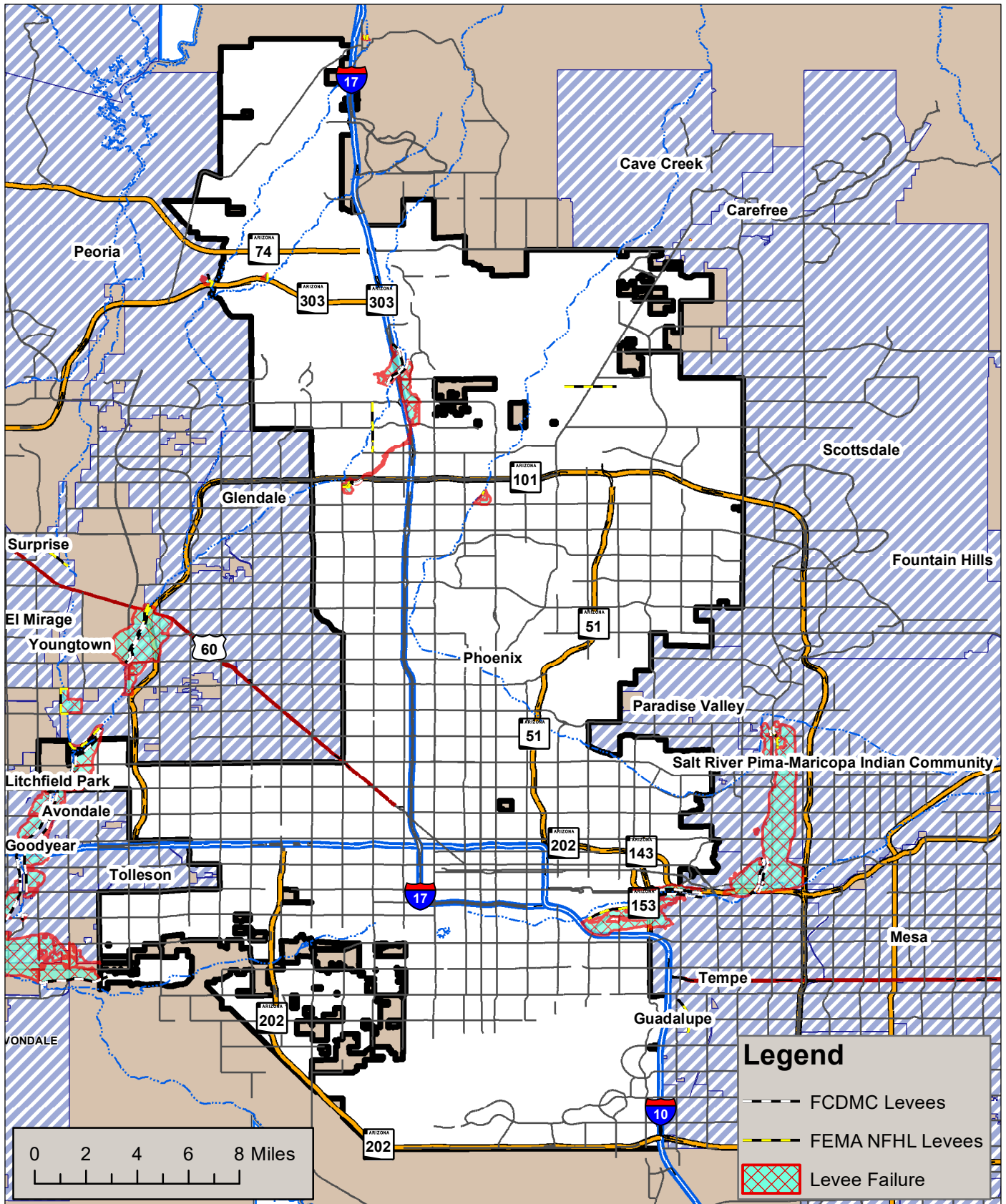
Maricopa County Multi-Jurisdictional Hazard Mitigation Plan






City of Phoenix


Map #4D18
City of Phoenix
Flood Hazard Map
as of Sept 2020



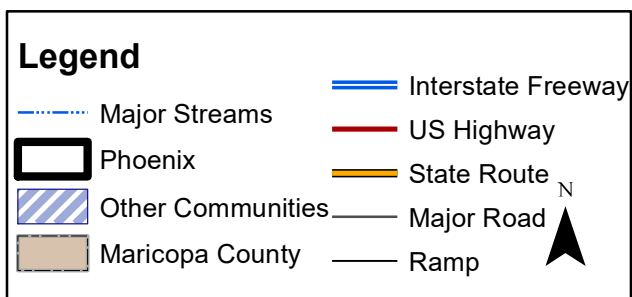
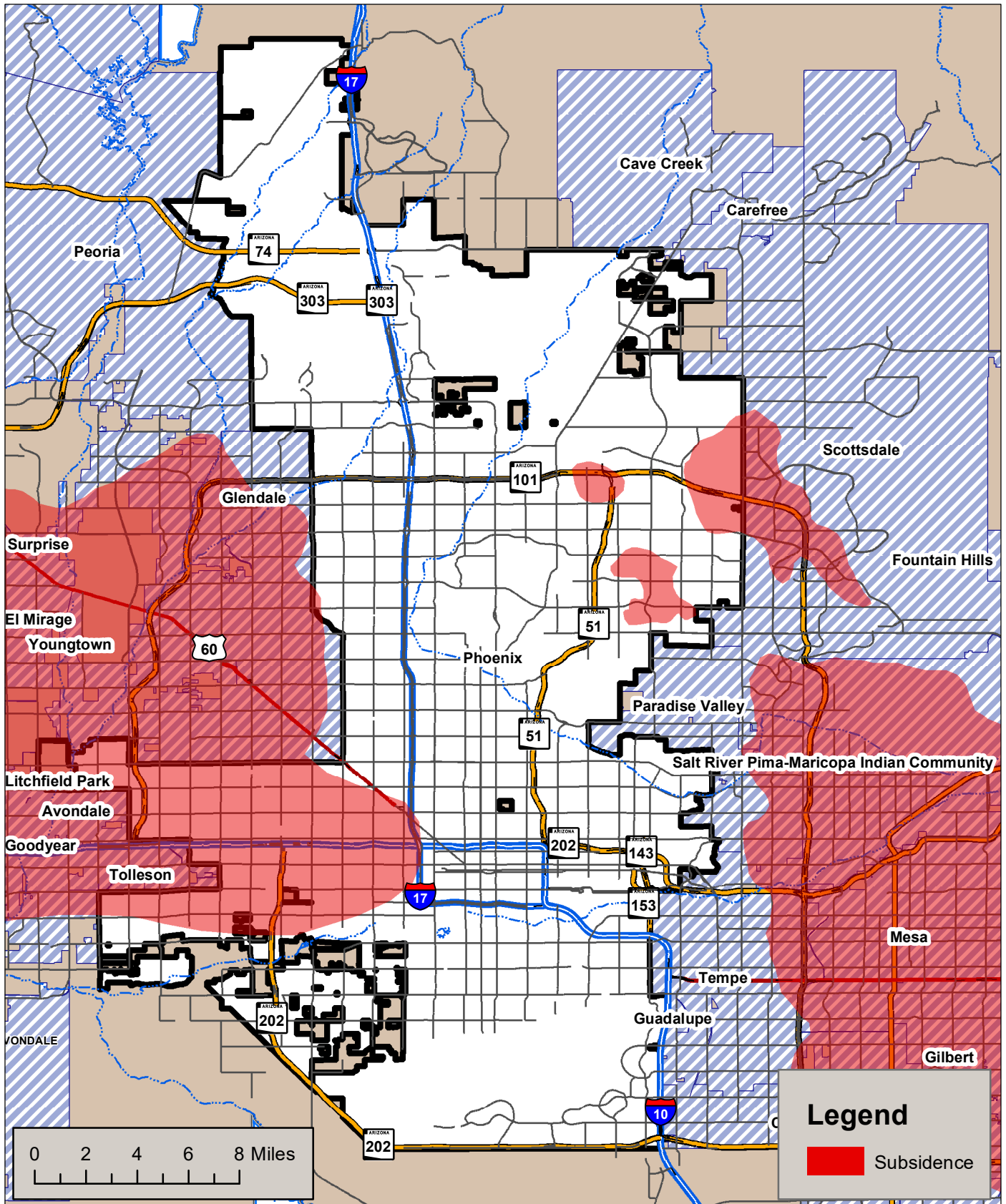
Maricopa County Multi-Jurisdictional Hazard Mitigation Plan





Map #5D18
City of Phoenix
Potential Levee Failure
Flood Hazard Map
as of Sept 2020



City of Phoenix

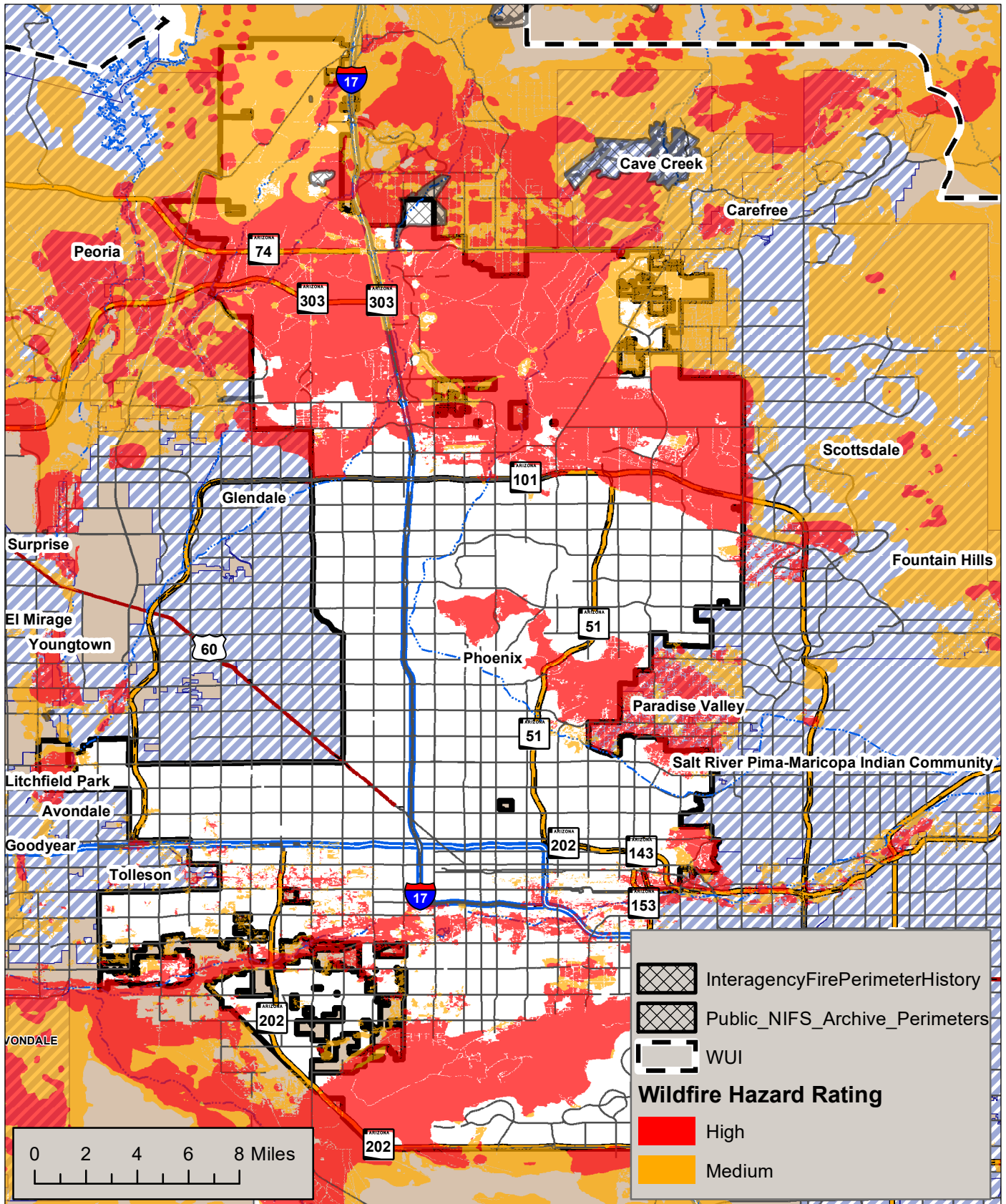


Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

City of Phoenix


Map #6D18
City of Phoenix
Subsidence Hazard Map
as of Sept 2020




Legend

- Interstate Freeway
- Major Streams
- Phoenix
- Other Communities
- Maricopa County
- US Highway
- State Route
- Major Road
- Ramp

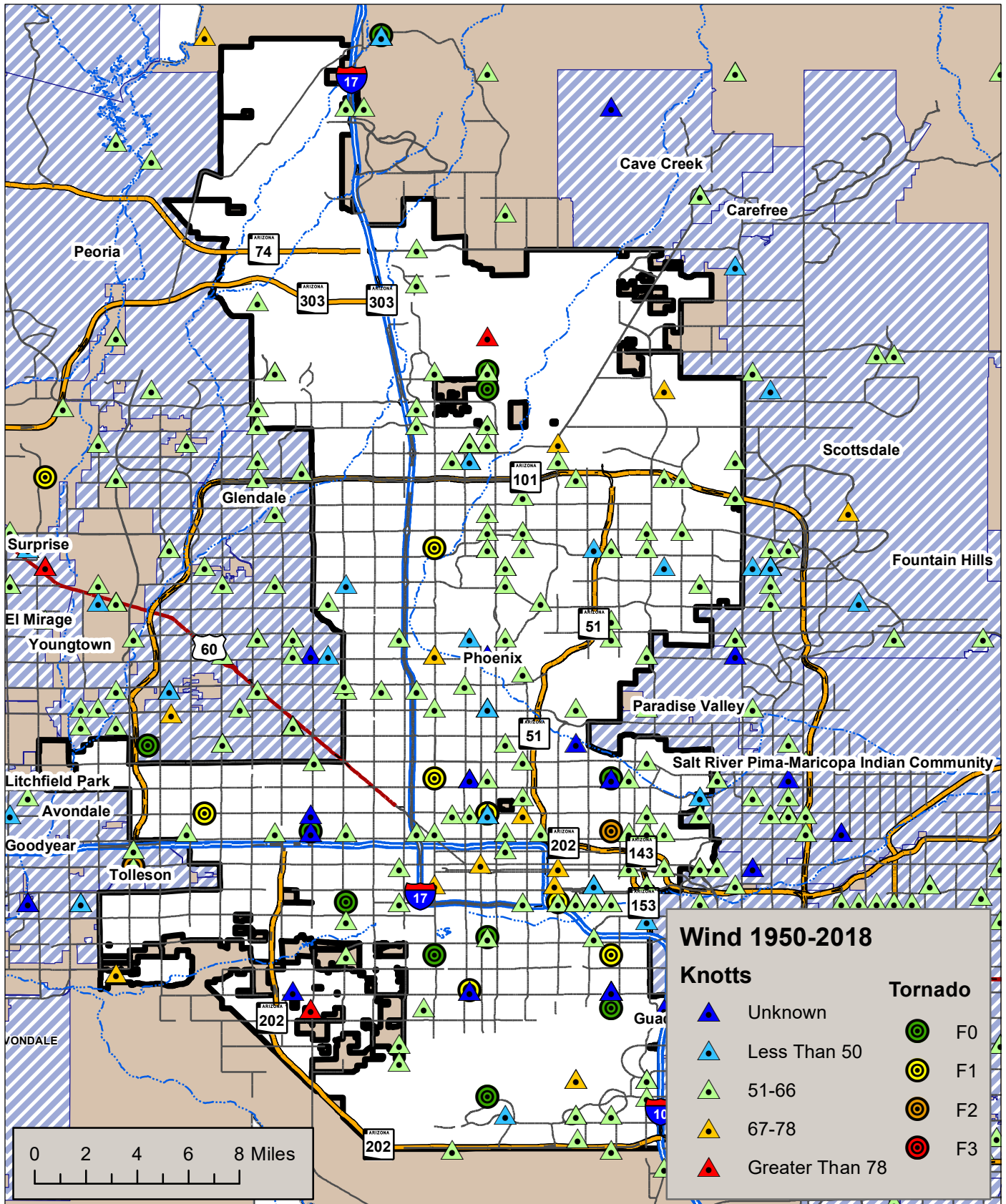
Maricopa County Multi-Jurisdictional Hazard Mitigation Plan



City of Phoenix





Map #7D18
City of Phoenix
Wildfire Hazard Map
as of Sept 2020



Legend

	Interstate Freeway
	Major Streams
	US Highway
	Phoenix
	State Route
	Other Communities
	Major Road
	Maricopa County
	Ramp

Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

City of Phoenix

Map #8D18
City of Phoenix
Severe Wind Hazard
Map as of Sept 2020