M E M O R A N D U M

TO: Mayor and Council Members

FROM: Jorge L. Morales, P.E., CFM, Director
Watershed Protection Department

DATE: April 28, 2021

SUBJECT: Response to Resolution No. 20210127-056 - Flood Resilience

The purpose of this memo is to provide a response to City Council Resolution No. 20210127-056, relating to the development of recommendations to reduce flood risks; strategies related to safety, equity, and resiliency to increase flood protection and flood resiliency; a summary of the City's flood management approach; and a report on the Resilient Austin plan.

Please find attached an executive summary and a full report detailing each of these topics.

Should you have any questions or need additional information, please feel free to contact me at 512-974-3438 or via email at Jorge.Morales@austintexas.gov.

cc: Spencer Cronk, City Manager
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Rodney Gonzales, Assistant City Manager
Shannon Jones, III, Interim Assistant City Manager
Denise Lucas, Director, Development Services Department
Rosie Truelove, Director, Housing and Planning Department
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Attachment: Flood Resilience Report

Staff Response to Council Resolution No. 20210127-056 re: Flood Protection and Resilience

Executive Summary

On January 27, 2021, Austin's City Council passed Resolution No. 20210127-056. The resolution addresses: severe flooding in Austin; the need to reduce risks and costs of flooding, especially for vulnerable populations; the need to coordinate and prepare for extreme weather driven by climate change; the many benefits of resilient communities and infrastructure; the need to coordinate actions with the Resilient Austin Plan; and the work of the 2016 Flood Mitigation Task Force.

The resolution directed the City Manager to take steps to increase flood protection and flood resiliency. The following is a summary of staff's response to the Resolution.

1. Summary of current City of Austin flood management approach to reduce flood risks.

Austin's modern flood management program dates back to the 1970s. Watershed Protection Department (WPD) and other City of Austin staff perform the following flood management approaches:

- study existing problems and use protective regulations to prevent new issues from being created.
- reduce flood risk with capital projects, maintain drainage infrastructure, and educate the public about flood risks.
- track rain events and coordinate emergency services to respond to floods, assist those who have been flooded, and repair damaged infrastructure. Austin is much safer and more prepared today due to these combined efforts. For example, since 2001, the City has reduced flood risks on over 1,800 buildings and upgraded 26 low-water crossings using capital projects alone; and more work is in progress today. WPD staff recognize that there is still much work to be done, especially to address the challenges of climate change and racial inequity. The department is actively working to address these concerns in the Watershed Protection Strategic Plan, discussed in detail in section 4 below.

2. Near-term recommendations to further reduce flood risks, including but not limited to:

a. Drainage Management for Redevelopment

The 2020 Land Development Code (LDC) Revision proposed to reduce Austin's flood risk by requiring drainage management for redevelopment. This would address an important source of flooding: older commercial and other developments that lack adequate provisions for managing stormwater. Staff strongly support measures to manage drainage from redevelopment projects along the lines of those proposed in the LDC Revision. But rather than proceeding with a standalone code change, staff recommends deferring such requirements to a more comprehensive process for revising the LDC that balances flood risk reduction with other Council priorities relating to infrastructure costs, housing capacity, and other topics under consideration during the LDC Revision process.

b. Commercial Redevelopment Exception

Staff recommend a new commercial redevelopment exception to allow existing commercial buildings in 25- and 100-year floodplains to redevelop under safer circumstances. Under current code, such projects must seek Council approval, which can discourage some attempts to rebuild. This new proposal would: (1) reduce flood risk; (2) ensure that no additional occupants or building area are threatened; and (3) require no public expense. All buildings that rebuild would be constructed a minimum of two feet above the 100-year flood elevation, significantly reducing flood

risk. The proposal is a complement to the residential redevelopment exception approved by City Council in November 2019 as part of the Atlas 14 floodplain regulations.

c. Ensure Commercial & Residential Compliance with Impervious Cover Limits

This section details how the City of Austin ensures compliance with zoning and watershed impervious cover limits using permit application review, inspections, and enforcement. Permitting processes for residential and commercial impervious cover limits are described in detail in staff's response (below). WPD assesses impervious cover every two years based on aerial imagery for the purposes of calculating the drainage charge for all parcels within our jurisdiction. In coordination with Austin Code and the Development Services Department, WPD may evaluate opportunities for using this data to identify where development may be occurring without a permit, and thus where development may not be in compliance with zoning, flood risk reduction, and/or environmental protection requirements. Staff also recommend an engineer's concurrence letter for site plan projects to increase compliance with impervious cover limits. Section 2.e.3, Improve regulatory and programmatic response to lot-to-lot drainage problems, offers recommendations related to the impervious cover limit concern.

d. Analyze/Recommend Solutions for Potential Housing Capacity and Affordability Impacts

Housing and Planning Department (HPD) staff evaluated all recommendations included in this report to evaluate their potential impacts on housing capacity and affordability. HPD staff support WPD's recommendation to implement enhanced drainage management for redevelopment as part of a more comprehensive and holistic set of code improvements that address housing needs, such as design flexibility and the provision of affordable housing. HPD staff also support the potential creation of a home repair program to assist low- and moderate-income households in making small-scale site improvements such as installing gutters, drainage swales, and floodproofing solutions.

e. Additional, Staff-Recommended Approaches

In addition to the three approaches requested by Council, staff recommend the following four approaches to help increase flood protection and flood resiliency.

1) **Map flood risks citywide, focusing on socially vulnerable areas.** This section describes Austin's ongoing efforts to further improve our mapping of known creek flood problems in larger drainage systems and known local flood problems in smaller storm drain and minor drainage channels. Staff is analyzing ways to prioritize areas of high social vulnerability.

2) **Increase the pace of project delivery for drainage solutions.** WPD is working to (1) construct early-phase beneficial drainage solutions faster and (2) realign WPD personnel and resources to increase production. Both strategies are intended to deliver flood protection and resiliency benefits more quickly, a high priority of the Flood Mitigation Task Force.

3) **Improve regulatory and programmatic response to lot-to-lot drainage problems.** Austin has strong drainage regulations that apply to larger-scale development (e.g., residential subdivisions and commercial or multifamily projects), but it has been challenging to implement processes to prevent and correct drainage problems in smaller-scale residential contexts. Staff recommends focusing on enforcement and correction of identified issues rather than creating new requirements for all building permits. Staff are considering four regulatory and process changes

to address negative drainage impacts in residential contexts and are studying options to assist low- and moderate-income homeowners to correct lot-to-lot drainage problems.

4) **Encourage communities upstream of Austin to adopt improved drainage and floodplain regulations.** Austin community members, including the Flood Mitigation Task Force, have called for the strengthening of drainage regulations in areas outside Austin's jurisdiction to reduce impacts in our area. Austin is currently collaborating with Travis County and other regional partners to update floodplain studies in the Central Texas region. Austin is also participating in the recently initiated State Flood Plan to coordinate and improve the flood management of cities and counties in the entire Lower Colorado River basin, which includes the City of Austin and its upstream and downstream neighbors.

3. Resilient and Equitable Community Plan: Scope of Work

The Resilience Core Team explored the following to prepare a scope of work:

1. Potential scope of the requested planning activities, particularly taking into consideration past and ongoing planning processes and/or current programs that could already inform requested planning activities,
2. Potential staffing and costs for the requested planning activities, and
3. Conducted initial discovery of potential internal and external funding sources to support requested planning activities.

This section explores our recommendations for the requested planning activities to be supported by a "standby" contract with an entity of appropriate expertise.

4. Watershed Protection Strategic Planning Process: Managing Flood Risk for Safety, Resilience, and Equity

WPD staff are actively working to update our Watershed Protection Strategic Plan—our department's guiding blueprint. It sets goals for our work, establishes the method to prioritize watershed problems, and establishes procedures to identify solutions. It provides a framework for evaluating future programs, projects, and regulations as well as measuring the success of our current portfolio.

Our three main goals for the plan are to: (1) reflect community values; (2) incorporate equity and climate resilience; and (3) be accessible and informative. Per the Flood Resilience Resolution, the update will include potential funding strategies, partnerships with stakeholders, and acquisition of open space. Focused attention will be given to reaching the following priority stakeholder groups:

1. Austin residents left out of past planning and decision-making processes or who are more likely to experience negative quality of life outcomes (people of color, low-income persons, et al.).
2. People who have experienced or are at an increased risk of negative watershed outcomes (flooding, erosion, water pollution) or who were affected by a recent watershed project.
3. Entities whose missions prioritize the environment and that bring environmental, technical, and/or policy expertise.

For the Strategic Planning process, staff plans to use a variety of community engagement strategies to reach stakeholders via diverse platforms and to minimize barriers to access and participation. WPD staff are currently in the pre-planning phase and hope to kick off the engagement process in the summer or early fall 2021. The community engagement is anticipated to run for about a year. Staff will launch the

process of plan development as soon as possible, but it will depend on what is learned from the community engagement. The preliminary goal is to finish the draft Strategic Plan document by fall 2022 and go through the review and adoption process in late 2022 and early 2023.

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1. Summary of Austin's Current Flood Management Approach to Reduce Flood Risks

Resolution: The City Manager is directed to take the following steps to increase flood protection and flood resiliency:

1. *Develop a concise summary of Austin's current flood management approach to reduce flood risks in Onion Creek, Walnut Creek, Shoal Creek, Williamson Creek, Bull Creek, and other City watersheds no later than April 30, 2021.*

Austin's goal for flood management, stated in our Watershed Protection Strategic Plan, is to protect lives and property by reducing the impact of flood events. Heavy rains are a natural and expected occurrence in Central Texas, located in what is known as Flash Flood Alley. Our region's unique combination of intense rainstorms, steep slopes, and slow-draining soils make it especially prone to severe flood events.

Severe floods have been a part of Austin's history for more than 150 years. More recent floods in 1981, 1998, 2013, 2015, and 2016 are reminders of the public safety and property hazards associated with these events. Flooding can occur in both primary and secondary drainage systems. Creek flooding problems are associated with the primary system (major creeks and their tributaries) while local flooding problems are associated with the secondary drainage system (storm drains and minor channels). A third, smaller-scaled form of flooding occurs with "lot-to-lot" flooding where runoff from one property negatively affects a neighboring property before it enters the public drainage system.

Since the mid-1970s, the City of Austin has embraced a comprehensive and proactive approach to flood management to prepare for and respond to flood events. These actions represent a turning point in flood management, with sharp decreases in the creation of new creek and local flooding problems coming as flood regulations evolved and improved in the 1970s and 80s.

This section briefly describes our current flood management approach across all City of Austin departments to reduce flood risks for our community. This work addresses flooding and drainage in <u>all</u> city watersheds, large and small. In basins with large catchment areas, such as Onion, Walnut, Shoal, Williamson, and Bull Creeks, the flood risks are typically larger and can require more complex solutions. The major components of Austin's current flood management approach are as follows:

A. **Strategic Planning.** Austin's flood program begins with strategic frameworks for flood management and drainage infrastructure management. We establish goals and objectives, identify and prioritize problem areas, and create protocols to develop and implement solutions. This approach uses a "worst problems first" philosophy such that we first look at the areas at the highest risk flood and attempt to resolve these first before continuing down the list to less severe problems. (Some problems are so difficult and complex that we cannot identify a feasible, cost-effective solution.) We are currently updating our Watershed Protection Strategic Plan with greatly expanded public engagement and a focus on community equity. This strategic planning organizes and focuses our actions. Watershed Protection Department (WPD) staff lead these planning efforts with input from other key departments and the public.

B. **Problem Prevention.** Prevention of new flood problems greatly reduces public costs compared to correcting problems once created. Austin's protective floodplain regulations and drainage design criteria are the backbone of preventing future flood hazards. We identify floodplain limits with engineering studies and restrict development in these areas. We also require robust storm drainage and detention infrastructure. And we review and inspect new developments for compliance with these standards. Figure 1 below shows the beneficial effects of preventative floodplain regulations--and the hazards of not fully understanding future flood risks. The dark blue bars show the number of

buildings constructed per decade within the area that, until very recently, was thought to be the 100-year floodplain. The City began to map these original floodplains in the mid-to-late 1970s and continued to add to and refine the mapped floodplains over time. Austin's rapid growth from the 1940s to 70s therefore lacked floodplain information, and an increasing number of buildings were inadvertently constructed in floodplains. But, with new information and regulations prohibiting construction in these hazard areas, the number of buildings dropped off noticeably in the 1980s and 90s, dwindling to near zero by the 2010s, a great success story. Unfortunately, the true extent of the 100-year floodplains during this period was not yet known. In 2019, Council adopted even more protective floodplain regulations--based on a statewide update of rainfall data--and all structures shown in the light blue bars were added to the 100-year floodplain. The graph shows both the importance of understanding flood risk (once the risk was first mapped and regulations passed in the 1970s and 80s, the number of new structures introduced into floodplains dropped sharply) and the importance of continually improving our understanding of flood risk (Council action in 2019 will avoid yet more construction in the floodplain in the years to come).

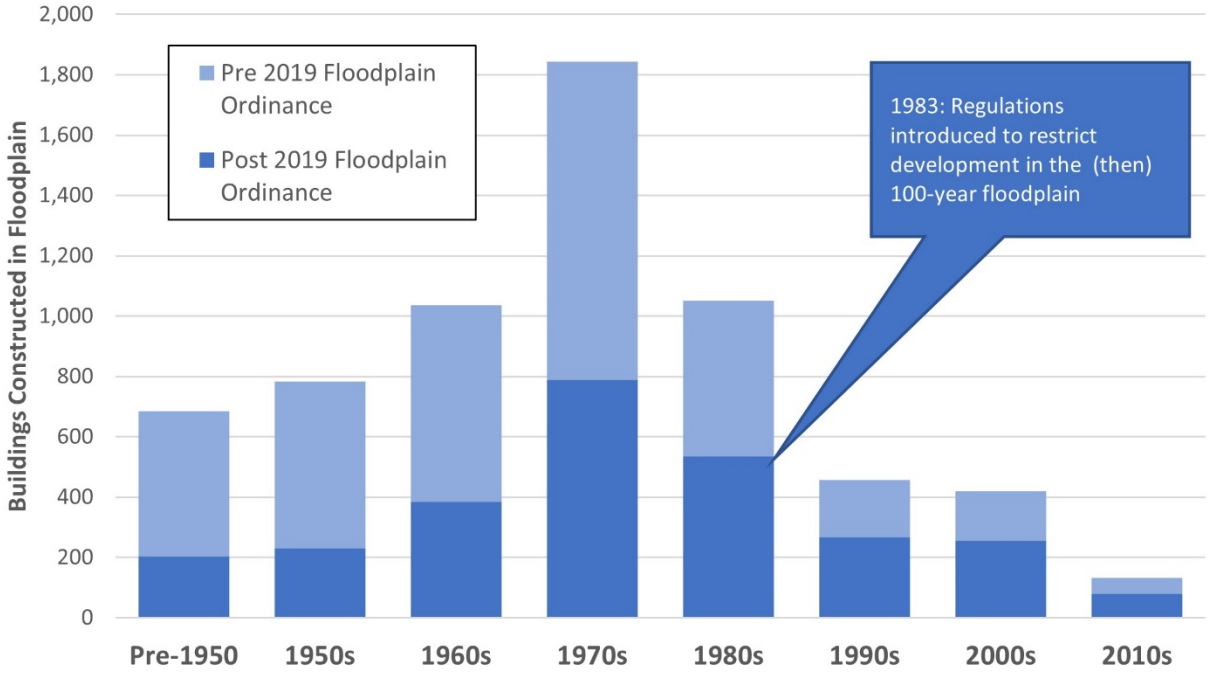

Figure 1: Count of structures built in the 100-year floodplain by decade, pre- (approximately 4,000) vs. post-2019 Floodplain Ordinance (approximately 3,000)

Our regulations and criteria only work to limit the creation of flood new hazards if they are properly enforced. Development Services Department (DSD) and WPD staff conduct the bulk of the development review and enforcement responsibilities.

C. **Problem Identification.** Much of Austin was developed prior to the implementation of our modern drainage and floodplain regulations. This has resulted in the construction of many buildings and roadways that are at risk of flooding and drainage systems that are unable to adequately convey stormwater runoff. To solve these problems, we first identify where they are and prioritize their severity. We use flood models, field investigations, and community reports (via 3-1-1 calls) to identify buildings, roadways, and properties within floodplains and local drainage problem areas. For this report, we evaluated available flooding data for the Onion, Walnut, Shoal, Williamson, and Bull Creek watersheds referenced in the Council Resolution.

Figure 2 below presents data for the watershed area and number of buildings affected by creek flooding and local flooding in the five subject watersheds and for the remaining watersheds. All statistics are for the land area within Austin's full-purpose jurisdiction (city limits). The five watersheds in focus collectively comprise about 41% of this land area; they account for about the same percentage (42%) of the total buildings reported to have local flooding and a slightly higher percentage (50%) of total buildings in the floodplain. Since watersheds with a larger land area have more buildings, we would expect the percentage of land area and number of buildings with flooding concerns to be similar, which is approximately the case. But the patterns are somewhat different for each of the five watersheds.

Bull Creek's percentage of total buildings reported to have local flooding (2.9%) is less than half of its share of the total city land area (7.4%) and it has an even lower percentage of total buildings in the floodplain (0.7%). The lack of severe flooding problems (relative to the other four subject watersheds and the City Limits area as a whole) can be credited to the watershed's steep topography and the fact that much of Bull Creek's development was built with the benefit of Austin's modern drainage design criteria and floodplain mapping.

Onion Creek also has a lower percentage of buildings reported to have local flooding (2.2%) than its land area (7.4%) but almost its proportionate share of buildings in the floodplain (6.4%). One key note is that the City of Austin, with strong Council support and working with other partners, bought more than 930 very high flood risk homes within the Onion Creek floodplain.

Shoal Creek has almost three times the proportion of buildings reported to have local flooding (13.2%) and total buildings in the floodplain (12.3%) compared to its share of the city's land area (4.6%). This is expected due to the age of development in this watershed, which in many cases dates back to decades before the City's first drainage design criteria and floodplain mapping.

Walnut Creek has roughly the same, or slightly less, of its proportion of buildings reported to have local flooding (10.4%) and total buildings in the floodplain (9.3%) compared to its share of the city's land area (11.6%). This is expected in that Walnut Creek's development patterns are roughly between those of Bull (benefitting from topography and modern regulations) and Shoal (much development prior to such regulations).

Williamson Creek has slightly higher than its proportionate share of buildings reported to have local flooding (13.0%) and over two times its proportionate share of total buildings in the floodplain (21.5%) compared to its share of the city's land area (9.8%). Like Shoal Creek, much of Williamson Creek's development dates back prior to Austin's first drainage design criteria and floodplain mapping. And, like Onion Creek, the City has reduced flood risk recently through more than 50 home buyouts, without which the numbers would be higher.

	Watershed Area in City Limits (square miles)	Local Flooding: No. of Building Flooding Reports	Creek Flooding: No. of Buildings in 100-year Floodplain	Percent of Total City Limits Area	Percent of Total Citywide Local Flooding Building Reports	Percent of Total Citywide Buildings in 100-year Floodplain
5 Selected Watersheds	**114.4**	**936**	**3,646**	**40.8%**	**41.7%**	**50.3%**
Bull	20.8	64	54	7.4%	2.9%	0.7%
Onion	20.7	50	463	7.4%	2.2%	6.4%
Shoal	12.9	296	893	4.6%	13.2%	12.3%
Walnut	32.5	234	678	11.6%	10.4%	9.3%
Williamson	27.4	292	1,558	9.8%	13.0%	21.5%
All Other Watersheds	**166.3**	**1,307**	**3,609**	**59.2%**	**58.3%**	**49.7%**
Citywide	**280.7**	**2,243**	**7,255**	**100.0%**	**100.0%**	**100.0%**

Figure 2: Watershed area and number of structures affected by creek flooding and local flooding for the five subject and remaining watersheds within Austin's full purpose jurisdiction

The Master (Strategic) Plan Problem Score Viewer website (see Figure 3 below) provides a way for the community to view the most salient problem areas for creek and local flooding, along with erosion control and water quality protection. WPD staff oversee this problem identification process.

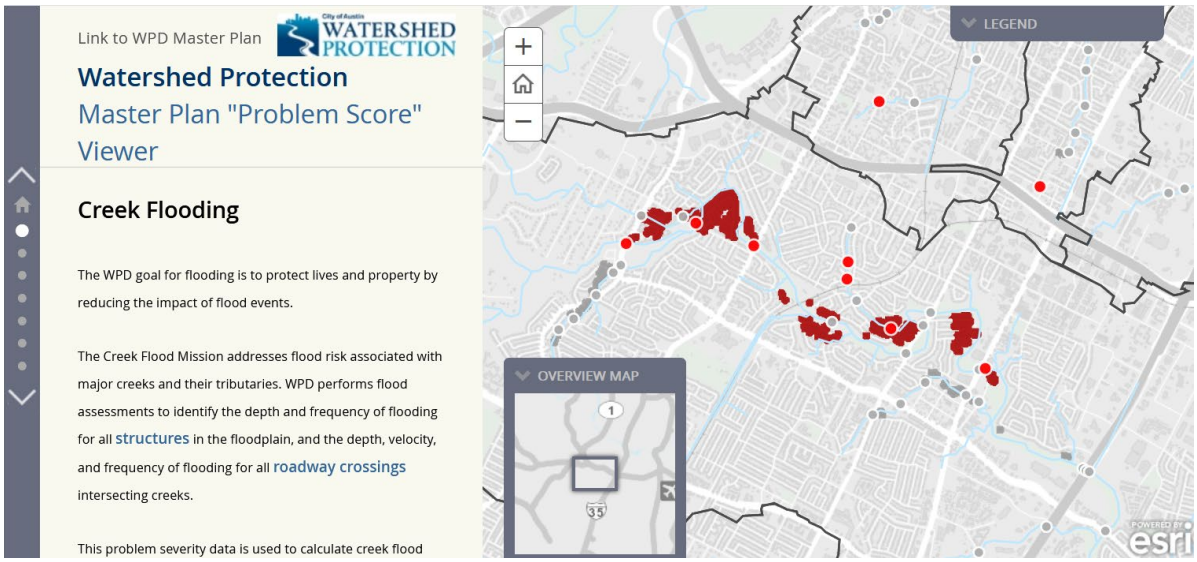

Figure 3: Screenshot of the Master Plan "Problem Score" Viewer, showing creek flooding details

D. **Capital Solutions.** We directly address existing flood risk areas through the design and construction of flood risk reduction projects. Solution types differ greatly with flood risk, geographic conditions, and watershed scale. They include: upgraded storm drain systems, property acquisitions, elevated roadway crossings, detention ponds, floodwalls, and modified channels. These are constructed by in-house crews, contractors, and through public and private partnerships. The Flood Risk Reduction Capital Project Web Map (see Figure 4 below) provides a way for the community to view the name

and location of past and future planned flood risk reduction capital improvement program (CIP) projects. WPD and Public Works Department (PWD) staff work with technical consultants and other City partners (e.g., Austin Water and the Parks and Recreation Department [PARD]) to implement our CIP solutions, with input from impacted residents. Since 2001, WPD has reduced flood risks on over 1,800 buildings and upgraded 26 low-water crossings using capital projects alone; and more work is in progress today.

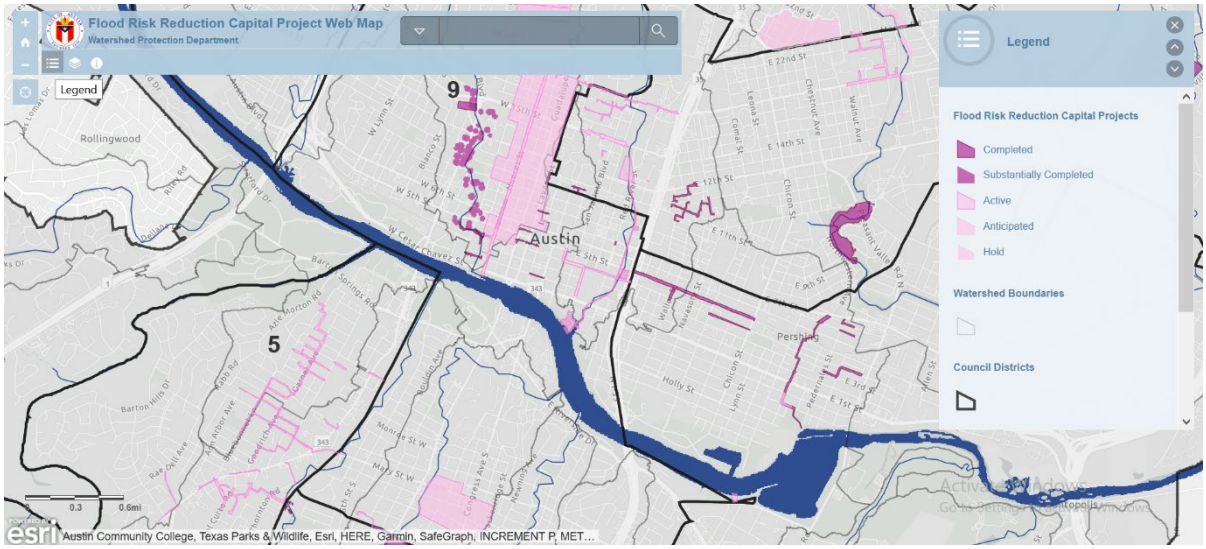

Figure 4: Screenshot of the [Flood Risk Reduction Capital Project Web Map], showing past and planned capital projects

E. **Infrastructure Maintenance.** We must operate, inspect, maintain, and repair our drainage infrastructure to keep it in operational condition. Components of our drainage infrastructure include: channels, pipes, inlets, tunnels, bridges, detention ponds, dams, drainage easements, rainfall and flow gauges, flashing lights, software, and telemetry systems. WPD staff carry out the bulk of these maintenance actions with assistance from the PWD Street and Bridge Operations.

F. **Public Education and Community Engagement.** A well-educated public is a safer public. We reach out to the community in a variety of ways: provide youth flood education through an annual flood poster contest; meet and engage with public audiences of all types through project-related meetings; inform residents and owners of properties in the floodplain and provide them with flood risk reduction information; and provide flood safety messages on the radio during times of inclement weather. We also rely upon the public for an additional and invaluable source of information about conditions, threats, and potential solutions. WPD staff carry out the bulk of these educational activities, working with affected City departments, other public entities, and the general public.

G. **Flood Early Warning System and Emergency Response Coordination.** Austin proactively monitors weather, waterway, and roadway conditions, using radar, precipitation and stream gauges, and predictive flood models. We communicate activities between City departments and with external partners, including Travis County, National Weather Service, Lower Colorado River Authority (LCRA), and US Geological Survey (USGS). For significant rainfall events, the City activates the Austin/Travis County Emergency Operation Center (EOC) to coordinate emergency responses. Before and during the events, we inform and alert the public about flood hazards using ATXfloods.com, emergency notification systems, social media, and mass media. We directly barricade roads at threatened low-

water crossings. We provide emergency response actions such as water rescues and evacuations. We also continuously train and equip our staff and partners for these responses. Multiple City of Austin departments are involved and closely coordinate: WPD, Homeland Security & Emergency Management (HSEM), Austin Fire Department (AFD), Austin Police Department (APD), Austin Emergency Management Services (EMS), PWD, PARD, and others.

H. **Post-Flood Community Assistance.** In our response to major flood events, we coordinate and communicate post-flood response activities internally and with external partners, such as Travis County, National Weather Service, LCRA, USGS, Red Cross, Austin Disaster Really Network (ADRN), Voluntary Organizations Active in Disasters (VOAD), the Federal Emergency Management Agency (FEMA), and community organizations. We and our partners provide food, potable water, clothing, temporary and intermediate shelter, and flood damage recovery information (e.g., cleanup, rebuilding, and security). Multiple City of Austin departments are involved and closely coordinate: WPD, HSEM, AFD, APD, PWD, PARD, Austin Resource Recovery (ARR), and others.

I. **Post-Flood Public Asset Recovery.** Floods can cause great damage to public infrastructure. To repair this damage, we conduct cleanup activities and debris removal; evaluate and repair public infrastructure flood damage to roads, bridges, and utilities; conduct damage assessments; collect high-water mark data; and produce after-action reports for future reference and to communicate lessons learned. Multiple City of Austin departments are involved and closely coordinate: WPD, HSEM, PWD, PARD, ARR, and others.

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2. Near-Term Recommendations

Resolution: The City Manager is directed to take the following steps to increase flood protection and flood resiliency:

2. *Develop near-term recommendations based on sound scientific data to further reduce flood risks in Onion Creek, Walnut Creek, Shoal Creek, Williamson Creek, Bull Creek, and other City areas where there is localized flooding no later than April 30, 2021, including whether the City Council should initiate amendments to the Land Development Code, including but not be limited to:*
    a. *drainage management for redevelopment;*
    b. *a redevelopment exception to reduce flood risk for commercial properties in the floodplain;*
    c. *provisions to ensure that commercial and residential development comply with zoning impervious cover limits, including residential additions and accessory dwelling units; and*
    d. *Analysis of projected impacts of any recommended and development code amendments related to flood mitigation on housing capacity and affordability and recommendations on how to address any of those impacts.*

a. Drainage Management for Redevelopment

One of the principal watershed recommendations in the 2020 Land Development Code (LDC) Revision proposal was to reduce Austin's flood risk by requiring drainage management for redevelopment of existing impervious cover. The proposed requirement would address an important source of existing flooding: older commercial, industrial, and multifamily developments that lack adequate provisions for managing stormwater. In today's code, when these places are redeveloped, they rarely have to provide flood detention ponds or upgrade drainage systems. This is because redevelopment is required to prevent additional drainage problems but not to help fix any existing problems caused by the site's

impervious cover or conveyance systems. In contrast, new development on undeveloped land has long been held to higher drainage standards.

The proposed redevelopment requirement would directly address drainage problems from older properties. When redeveloped, sites would need to manage stormwater as if they were undeveloped "greenfield" sites – as if they had no existing impervious cover. In some cases, application of the new requirement would contribute to storm drainage upgrades. New development and redevelopment would thus be held to the same drainage standards. Under current drainage criteria, very small redeveloping sites (one-half acre or less) would likely be allowed to contribute to off-site drainage upgrades rather than constructing a small detention pond on-site.

Council Resolution No. 20210127-056 asks for a staff recommendation on whether City Council should initiate an LDC amendment to require drainage management for redevelopment in the near term, separately from the LDC Revision as a whole. Staff continues to strongly support this potential code change because requiring flood management for redevelopment remains an important step to reduce flood risk from existing older development. However, in consultation with LDC Revision Team leadership, staff recommends deferring this amendment to a more comprehensive process for revising the LDC that balances flood management with other policy priorities.

This recommendation reflects the fact that redevelopment sites can be more constrained and complex to develop than undeveloped greenfield sites of the same size. Managing stormwater would be a new cost for these sites to absorb, and some strategies – like above-ground detention ponds – may affect a site's buildable footprint. Although drainage management typically represents a small percentage of a project's total cost, the additional cost would be incorporated into the rent or sale price of residential units. Likewise, a project that chooses to provide an above-ground detention pond might need to reduce or reconfigure its buildable footprint, which could reduce the number or size of housing units possible to build.

The recommendations in the LDC Revision as a whole sought to balance new requirements to improve flood resilience with options to offset negative impacts to development feasibility. For example, sites redeveloping under the new drainage requirements would also have modified compatibility setbacks, reduced parking requirements, and access to increased entitlements through an affordable housing incentive program. This combination of regulations and incentives was intentionally developed to offset added infrastructure costs and enhance flexibility in design, project buildability, and housing capacity. Staff supports deferring any significant changes to drainage requirements for redevelopment to a more comprehensive and holistic code revision process.

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b. Commercial Redevelopment Exception

Staff are proposing to revise Austin's floodplain regulations to include a commercial redevelopment exception that would provide staff with the administrative authority to allow some commercial buildings proposed for redevelopment to encroach in the 25-year and 100-year floodplains.

A residential redevelopment exception was already included as part of the floodplain regulations approved by City Council in November 2019. At that time, the possibility of a commercial counterpart was discussed. Staff told Council that we would bring a commercial redevelopment exception code revision to them for future consideration.

The objective of the proposed commercial redevelopment exception is to create an administrative approval path to facilitate commercial redevelopment that reduces flood risk compared to the existing conditions. Presently, if an applicant proposes redevelopment of a commercial property that does not

meet the safe access regulation, the applicant is required to request a floodplain variance from the City Council regardless of the proposed building's height above the floodplain. From the applicant's viewpoint, the process takes time, incurs expense, and has an uncertain outcome: Council may or may not grant the variance.

This proposed administrative process would allow staff to waive the safe access regulation while reducing the cost and uncertainties that exist with the floodplain variance request process. The safe access regulation requires that a development provide an access path from the building to the right-of-way that is at least one foot above the 100-year floodplain. This is an important regulation for new developments to ensure safety for ingress and egress to the building by occupants and first responders. However, there are many existing buildings that are at flood risk that are on properties that cannot satisfy the safe access regulation. Having an exception in place to allow these properties to redevelop while minimizing flood risk to the building through elevation is an effective way to reduce flood risks.

The desired outcome of the proposed commercial redevelopment exception is to (1) reduce the flood risk for commercial buildings at high risk of flooding; (2) ensure that no additional occupants or building area are at threat in the proposed commercial building; and (3) to accomplish this without public expense. All buildings that rebuild using this exception would have to be constructed a minimum of two feet above the 100-year flood elevation, significantly reducing flood risk. The proposed exception requires that the elevated replacement building (a) not increase the building square footage on the property and (b) not increase the current occupant load. These provisions help prevent putting additional persons (building occupants) in harm's way. And such construction would be done at private expense.

If the commercial redevelopment exception is not created, the only paths to reducing risk would be to obtain a Council floodplain variance (see concerns and limitations above) or to use public funds to reduce risks via structural or nonstructural capital improvement solutions.

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c. Ensure Commercial & Residential Compliance with Impervious Cover Limits

The Land Development Code (LDC) specifies impervious cover limits by two methods: impervious cover limits by zoning district and impervious cover limits by watershed regulation area. Zoning impervious cover limits are not specifically related to issues such as flooding, erosion, and water quality of creeks, but they are a planning tool by which the city outlines the amount of green space required for a certain zoning category. The LDC applies an additional impervious cover limit to groups of watersheds based on their classifications. Classifications include: Urban, Suburban, Barton Springs Zone, Water Supply Suburban, and Water Supply Rural. Each classification has different watershed impervious cover maximums, with Urban watersheds relying solely on zoning impervious cover maximums. For a given property, the more restrictive of the two impervious cover limits apply. For example, a commercial property in the Water Supply Rural area (maximum impervious cover 20%) with Community Commercial (GR) zoning (maximum impervious cover 90%) would have to restrict its developed footprint to the more restrictive 20% impervious cover.

These watershed limits apply at the site plan and subdivision level, but are not applied at the residential-lot scale for individual building permit projects. However, because watersheds that are classified as Urban have no watershed impervious cover limits, we recognize that there are environmental benefits to limiting zoning impervious cover in areas where watershed impervious cover limits are absent. Negative environmental consequences of high impervious cover limits can be seen in urbanized creeks that experience increased erosion, altered stream hydrology, degraded aquatic habitat and biodiversity, and poorer water quality.

However, when considering how to manage flooding, it is important to distinguish between additional runoff caused by impervious cover and the grading necessary to convey runoff away from the building and to an appropriate location. Construction activities can change drainage patterns to create or exacerbate drainage problems for adjacent properties. These lot-to-lot flooding issues can often be prevented through attention to appropriate site grading. A typical SF-3 zoned lot is allowed 45% zoning impervious cover, which theoretically leaves sufficient space for an appropriately planned lot to manage stormwater on site without causing additional flooding to neighbors, streets, or the receiving water body. Please see section 2.e.3 for further discussion of potential policy options to address these types of lot-to-lot flooding issues.

The City of Austin ensures compliance with zoning impervious cover limits through three processes: 1) Permit Application Review, 2) Inspections, and 3) Enforcement.

Development Services Department (DSD) staff review development applications for compliance with zoning impervious cover limits when permit applications are submitted for approval. Both Residential Review staff and Site Plan review staff are responsible for ensuring that a proposed project complies with the Land Development Code, including zoning impervious cover limits. Building and Environmental Inspections staff ensure that the finished project in the field complies with the approved set of plans. If complaints arise through the 3-1-1 system with suspected cases of non-compliance, inspectors within Austin Code Department are notified and will investigate complaints related to single family residential lots, and the inspectors within DSD's Environmental Enforcement Division investigate complaints related to commercial or multifamily projects.

Residential Zoning Impervious Cover Limits

Review process: With some exceptions, construction within subdivided lots or legal tracts with single-family homes, duplexes, or certain townhomes require building permits. Permit applications that require review from the zoning plans examiner staff within DSD's Residential Review Division ensure that plans comply with impervious cover limits per zoning category. For example, residential additions and Accessory Dwelling Units (ADUs) both require compliance with zoning impervious cover limits. SF-3 zoning, which allows ADUs, is allowed 45% impervious cover by gross site area. If an applicant wishes to exceed the site's zoning impervious cover limit, then they must seek a variance from the Board of Adjustment which will either approve or deny the request based on applicable criteria.

Inspection process: Building Inspections staff within DSD are responsible for ensuring that zoning impervious cover limits are met. Per the Local Amendment to the International Residential Code R104.4, inspections staff require an impervious cover survey or other additional construction documents prepared by a registered design professional when a site is within 5% of the maximum allowable impervious cover or when the maximum is exceeded. DSD Building Inspections staff also request such surveys, as required by the Building Criteria Manual 4.6.2.1 – "Layout Inspection", as well as other relevant development documents, such as finished floor elevations, for projects located within floodplains. If the as-built survey shows that zoning impervious cover has been exceeded, the project will not pass the final inspection until the applicant implements corrective actions and a compliant as-built survey is presented.

Violations/enforcement: The Austin Code Department responds to complaints submitted to 3-1-1 related to work without a permit or development in excess of the allowed impervious cover. A code inspector will visit the location, investigate any relevant permitting documents, and make a visual assessment from an approved public vantage point. If a violation can be verified, a Notice of Violation is sent to the property owner notifying them of the violation and providing a compliance deadline. The owner is required to either remove the violation, find a compromise onsite, or request the violation be

permitted. If the owner fails to comply with a Code Violation, an affidavit will be filed with the Municipal Court for legal escalation and a final remedy.

Commercial Zoning Impervious Cover Limits

Review process: Commercial, industrial, civic, and multifamily projects require site plan approval through DSD's Land Use Review Division. Site plan review staff verify that the project complies with zoning and watershed impervious cover limits prior to site plan approval. Environmental review staff in DSD verify that the project complies with watershed impervious cover limits.

Inspection process: Environmental Inspections staff within DSD ensure that the final built environment matches the approved elements within a site plan to ensure that the final condition meets zoning and watershed impervious cover requirements. Final drainage patterns are inspected by Environmental Inspections staff to ensure compliance with approved plans and Environmental Criteria Manual (ECM) section 1.2.2 to ensure that no concentrated flows occur above the receiving water body.

Violations/enforcement: Environmental Inspections staff respond to complaints related to work without a permit for site plan projects, including those related to impervious cover. Flooding violations are considered priorities and can result in an immediate Stop Work Order or citation. Staff works with the owner or agent until compliance has been achieved. Reinspection fees are assessed as applicable. After three non-compliant inspections, or if a citation is immediately issued, an affidavit is filed with Municipal Court that may include criminal charges and fines up to $2,000 per violation per day.

Recommendations

In order to alleviate concern from residents about development in excess of zoning impervious cover limits, a multidepartment working group of staff from DSD, Austin Code Department, and Watershed Protection Department (WPD) have developed the following recommended procedural modifications for consideration.

1. Evaluation of Residential Construction without Permits: WPD assesses impervious cover every two years based on aerial imagery for the purposes of calculating the drainage charge for all parcels within our jurisdiction. In coordination with Austin Code and DSD, WPD will evaluate opportunities for using this data to identify where development may be occurring without a permit, and thus where development may not be in compliance with zoning, flood risk reduction, and/or environmental protection requirements.
2. Residential Review and Site Plan: Add a check box to applicable permit applications acknowledging that any changes in drainage patterns are subject to applicable state-law prohibitions on damaging adjacent property. (See more in section 2.e.3, Improve Regulatory and Programmatic Response to Lot-to-Lot Drainage Problems, below).
3. Site Plan: At the time of final inspection, the required engineer's concurrence letter does not specifically discuss adherence to impervious cover limits. Staff recommends that adherence to impervious cover limits be added to the required concurrence letter for seal prior to final inspection.

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d. Analyze/Recommend Solutions for Potential Housing Capacity and Affordability Impacts

The Housing and Planning Department (HPD) reviewed and analyzed the recommendations in this resolution for their potential impacts on housing costs and housing capacity. HPD supports the recommendation of the Watershed Protection Department to include the drainage management for

redevelopment requirement as part of a more holistic approach to improving the LDC. Without other balancing measures in place that could offset these added requirements, the housing capacity of redeveloped sites could be negatively impacted by the drainage management for redevelopment requirement. Housing affordability is already a significant stressor for many low- and moderate-income households. Increased development costs will be included in the rents and sales prices of new housing created and can have ripple effects in vulnerable communities that increase displacement pressure. Inversely, code changes that can improve drainage conditions on redeveloped sites while also increasing housing capacity, creating stable and affordable housing, and improving design flexibility, can have positive benefits for all members of the community. Proposals in the most recent version of the LDC Revision that could directly impact development feasibility in such cases include modified compatibility standards, reduced parking requirements, and increased height, floor to area ratio, and density entitlements through an affordable housing incentive program.

The commercial redevelopment exception in the floodplain will moderately improve certainty for the limited number of commercial redevelopment projects that occur within the floodplain. Predictability is valuable and providing a pathway for these projects to proceed without discretionary approval will improve predictability.

The impervious cover limit enforcement strategies offered in the previous sections offer cost-effective ways to build in additional preventative provisions and further ensure that developments do not get build out that do not comply with existing policy. Related to the above measures, the staff recommendations in section 2.e.3. build upon existing enforcement and compliance measures. The addition of the nuisance violation in Title 9 to address lot-to-lot flooding presents an opportunity to remediate drainage issues after construction is complete; however, the damages incurred as well as the cost to reach compliance could represent a cost burden to vulnerable low- and moderate-income households. For that reason, HPD staff support the potential development of a home repair program that would assist low- and moderate-income homeowners to implement drainage solutions to remediate lot-to-lot flooding issues. Many low- and moderate-income homeowners may not have access to the resources needed to resolve code compliance issues or make adequate repairs and upgrades to their homes, such as floodproofing, gutters, or drainage swales. Such a program would complement the existing home repair programs administered by HPD that can help low- and moderate-income homeowners lessen displacement pressure. If funding was identified for such a program, the Housing and Planning department could administer the new program building off of other programs' infrastructure and utilizing existing relationships with the Home Repair Coalition.

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e. Additional, Staff-Recommended Approaches

2.e.1. Map flood risks citywide, focusing on socially vulnerable areas.

A key component of flood resilience is a detailed understanding of the geographic location and severity of flood risk. By knowing that a property may be at risk, property owners and renters can make an informed decision about purchasing flood insurance—or whether to purchase or occupy a given property or building in the first place. This section describes the City of Austin's detailed mapping of known creek flood problems in larger drainage systems and of known local flood problems in smaller storm drain and minor drainage channels. Our current level of knowledge is very good by national standards, but we are actively working to improve both systems even further.

Mapping of Creek Flood Risks. At present, WPD has detailed floodplain information for our larger creek systems. We are currently working to update floodplain maps, which will benefit more of our community by accurately indicating flood risk . Austin applies its floodplain regulations to development

along creek systems that receive at least 64 acres of contributing area. This means that any new commercial or residential development that has a waterway with 64 or more acres of drainage (see Figure 5 below) must delineate the floodplain extent and abide by the regulatory requirements to provide adequate flood protection.

Figure 5: Drainage areas in the Hancock Branch of Shoal Creek starting at 64 acres for regulatory floodplains

64-acre creeks are a fine-grained measure of floodplain delineation. FEMA, for example, typically has a minimum threshold of 640 acres (one square mile) for the delineation of floodplains in communities that participate in the National Flood Insurance Program (NFIP). By extending floodplains upstream to the much smaller 64-acre threshold, Austin's regulations provide its residents with increased flood protection and give its residents along these waterways much improved information upon which to understand flood risk.

At present, the extent of this flood mapping varies: not all of Austin's creeks have floodplain information yet to the 64-acre level. Historically, like in most US communities, only the much larger creek systems were mapped. However, as part of our citywide floodplain study project, WPD is working to have all creeks mapped with updated flood risk information for all waterways to the 64-acre level. This will greatly increase the knowledge of flood risk for those living or working in close proximity to these floodplains. Such knowledge also increases WPD's ability to pinpoint those residents and property owners at risk of flooding to engage in public education about flood risks, best practices to respond before and during a flood, and to gain information from the public to increase our own understanding of risks and potential solutions.

Mapping of Local Flood Risks. Only about one-half of all of our known buildings with potential flooding problems are located in mapped floodplains—areas of creek flooding. The other one-half of buildings with known, potential flooding problems are associated with the secondary drainage system (storm drains and minor channels)—areas of local flooding. WPD maintains the infrastructure serving this system and endeavors to best understand the locations of any problems affecting residents and property along these systems.

Until the recent past, the City of Austin gathered information and built solutions for local flooding problems on a case-by-case basis in response to residents' complaints. While complaint information still plays a useful role in problem prioritization, WPD has moved towards an improved understanding of the magnitude and causes of local flooding, aided by the use of one-dimensional (1-D) and two-dimensional (2-D) engineering models. Currently, WPD is comprehensively modeling the capacity of storm drain systems in older areas, such as the Central Business District, and other areas with the highest number of recorded flood complaints. The long-term goal is to provide models for all storm drain systems in all watersheds. In addition to prioritizing engineering modeling based on resident complaints, we will be analyzing how to incorporate equity into our prioritization process to acknowledge that some communities have a more difficult time recovering from flooding.

WPD uses 1-D storm drain modeling software to simulate storm events and assess the ability of existing storm drain systems to capture and convey runoff. WPD has completed 1-D models for more than 952 miles of the City's drainage systems. This represents about 87% of the approximately 1,100 miles of storm drain pipe in the City.

However, one-dimensional models are not able to predict flow patterns of water above ground surface elevations. WPD is now analyzing storm drain systems using 2-D models to identify flooding impacts where drainage systems fail. Two-dimensional models estimate not only the capacity of the storm drain system pipes but also the spread of water on the surface, thereby showing which structures and roadways may be affected. This approach provides a more detailed estimation of the impacts on public and private property when the storm drain system is undersized. An example of a 2-D model is shown in Figure 6 below.

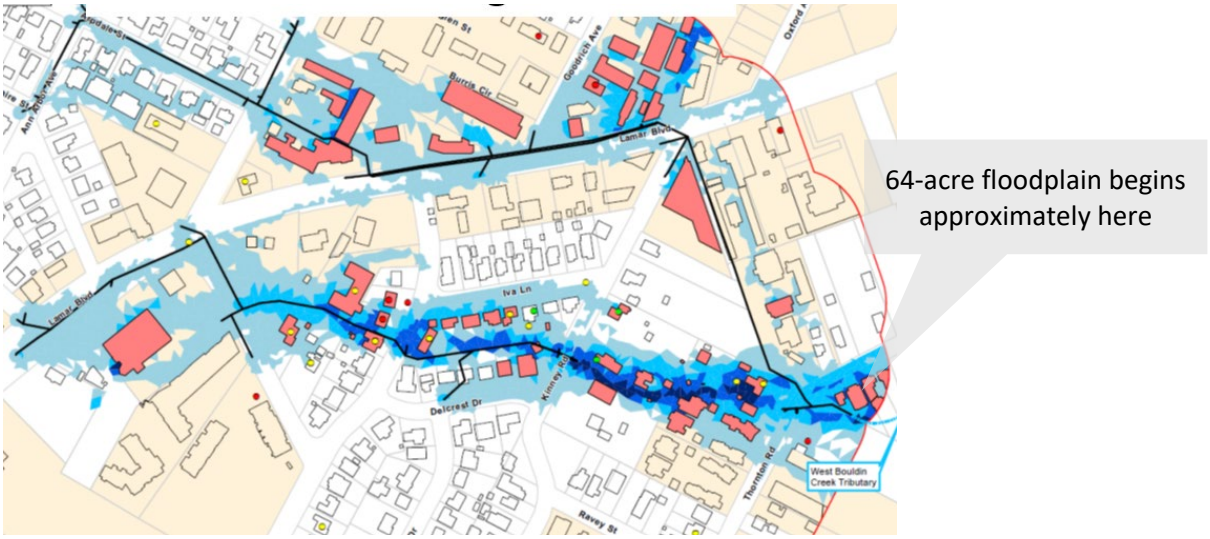

Figure 6: Example 2-D Local Flood risk mapping for the Del Curto storm drain in West Bouldin Creek in South Austin; provides risk information for all areas above the 64-acre drainage area threshold point indicated by the callout box

When available, the results of these 2-D models will greatly improve the understanding of problem areas and are useful in designing flood risk reduction projects to protect lives and property during flood conditions. As we complete additional 2-D models, we will build the inventory of local storm drainage system flood risk maps that will be used by staff to prioritize, design, and implement flood risk reduction projects and communicate the information to our residents so that they may be better prepared when a flood occurs.

2.e.2. Increase the pace of project delivery for drainage solutions.

Provide near-term solutions while long-term solutions are developed. WPD has recently created a new model for project delivery that allows us to implement short-term solutions within a portion of a larger solution on a longer timeframe. Large-scale drainage infrastructure projects are complex and take a long time to analyze, design, and construct. At the same time, there are often embedded within the larger problem, a number of small-to-medium drainage problems that can be addressed with less analysis, design, and costly construction. Our new model allows us to continue fixing large-scale problems that bring major relief to many people and also use more nimble techniques to tackle "low-hanging fruit" (like replacing undersized storm drain inlets or increasing the maintenance frequency of drainage infrastructure) in a short timeframe to bring at least a small level of immediate relief. An example of this new approach is the replacement of undersized and difficult-to-maintain curb inlets in the Brassiewood neighborhood of Dove Springs in southeast Austin. These inlets are part of a much larger drainage system that will require a longer-term solution to provide full benefits. But the construction of these improved inlets is already helping address street drainage while the larger project can be developed.

Realign WPD personnel and resources to increase production. WPD strives to be as dedicated and responsive to the needs of the community as possible. As the community has grown, so too have the number and complexity of drainage challenges. WPD too has grown and become more specialized to keep pace. We now recognize that some of these actions resulted in the assignment of multiple priorities to existing staff teams—assignments that competed for limited staff bandwidth. In order to be responsive, these teams often have to focus their attention on the most time-sensitive, high-visibility issues. For example, staff who have the responsibility of both reviewing development permit applications and designing new drainage infrastructure, have faced a choice on which to spend time on. As a result, our design projects have at times been delayed by the need to more immediately attend to requests from residents, other departments, or City Council.

Under our new organizational structure, we have deliberately created more focus for each of our service priorities. Now, all project delivery functions—to build solutions to drainage and other watershed problems—are consolidated under one Assistant Director. And the duties that previously competed with project design and delivery have been assigned to specialists in those other areas. We believe this will allow WPD to reduce the time it takes to deliver core infrastructure improvements and services to Austinites most in need, while maintaining or increasing quality.

2.e.3. Improve Regulatory and Programmatic Response to Lot-to-Lot Drainage Problems.

Flooding is caused by a combination of drivers that can vary based on local conditions—these factors include rainfall intensity, topography, the capacity of storm drain systems and channels, the location of structures in drainage paths, and unmanaged impervious cover. Austin has extreme rainfall intensities, steep terrain, and many areas that were developed prior to modern drainage design standards. In this context, property owners can inadvertently change drainage patterns to create or exacerbate drainage problems for adjacent properties. While the City has strong oversight processes for residential subdivisions and commercial and multifamily development, it has been challenging to implement processes to prevent and correct drainage problems in smaller-scaled residential contexts. This section describes potential code and process changes currently under consideration to improve outcomes for lot-level residential drainage.

Residential development must comply with impervious cover limits and all other applicable codes, including the Uniform Plumbing Code (UPC) and International Residential Code (IRC). Local amendments

to the UPC were adopted in 2017 to strengthen existing language regarding drainage. Prior to this amendment, the City did not actively become involved in residential lot-to-lot flooding cases as they were considered a private matter resolved via Texas law. While there has been some success enforcing this amendment during construction (i.e., projects with active permits), enforcement has been challenging because the UPC only regulates drainage as it pertains to building plumbing systems. It is not intended to address overland flows, nor are plumbers and Plumbing Inspectors trained to design and evaluate lot-level drainage. Furthermore, drainage issues may be created or discovered after construction is complete and enforcement via the UPC is no longer viable.

Given these enforcement challenges, staff recommends re-evaluating our approach to lot-to-lot drainage issues. At the same time, we are mindful of policy tradeoffs given the relative infrequency of their occurrence. For this reason, staff recommends focusing on enforcement and correction of identified issues rather than creating new requirements for all residential building permits. Staff has considered but does not recommend requiring drainage plans or detention for this scale of development due to the cost and review process impacts. However, staff is currently evaluating five potential changes to our approach intended to increase household flood resiliency:

1. **Add a check box to applicable permit applications acknowledging that any changes in drainage patterns are subject to applicable state-law prohibitions on damaging adjacent property.** This would inform applicants of their responsibilities regarding lot-to-lot drainage. Staff is considering including an acknowledgement on residential applications that the review of the project by the City of Austin will not include a review of site drainage.
2. **Consider using a revised section of the International Residential Code (IRC) rather than the Uniform Plumbing Code (UPC) for enforcement of lot-to-lot concerns that are reported during the development process.** This approach could include introducing a local amendment to the IRC and/or augmenting existing IRC drainage requirements (R401.3 and R801.3) with new criteria to specify approved points of collection and define a hazard to include concentrated discharge to an adjacent property. This would guide project designers and support more consistent enforcement. If a lot-to-lot drainage concern is reported for an active permit, Development Services Department Environmental Inspectors would work with the involved parties to achieve voluntary compliance or place an administrative hold on the permit until the issue is resolved.
3. **For active permits, consider training Environmental Inspection staff to observe visually apparent lot-to-lot drainage problems and notify the project owner of a potential issue.** Without a grading plan or detailed topographic information, this approach must necessarily be advisory. The potential benefits of this approach must be weighed against the resource and staffing implications. This approach would necessitate supporting criteria in the Drainage Criteria Manual.
4. **For post-construction violations, consider creating a separate nuisance violation in Title 9 *(Prohibited Activities)* to address harmful impacts caused by discharge to a neighboring property.** This would enable enforcement whenever the nuisance conditions occur, instead of only during the development process. If voluntary compliance cannot be achieved, the City or the adjacent property owner could initiate a case at Municipal Court to prove damages (up to $2,000 per incident). This action would represent a major change in approach for the City—currently these issues are considered a private matter resolved via state law. The potential benefits of this approach must be weighed against the resource and staffing implications.
5. **Study options to provide assistance for lot-to-lot drainage solutions for low- and moderate-income residents.** Staff recognizes that the correction of lot-to-lot drainage issues can be complex and costly, especially for low- and moderate-income households. Thus, staff is currently exploring

legal constraints, funding sources, and potential mechanisms to provide technical and/or financial assistance to one or both property owners for cases in which the necessary property modifications would represent a cost burden. These solutions could include small-scale property modifications such as gutters, drainage swales, and floodproofing, potentially administered through an expansion of existing City home repair programs. There are limitations in state law on the use of the Drainage Utility Fund for certain types of projects on private property, although alternative funding options may be available. As staff explores this model, WPD will coordinate with the Housing and Planning Department and the Law Department regarding program design and compliance with all applicable legal requirements.

Actions Required. Staff will work with the Development Services Department, Law Department, and Austin Code Department to develop criteria, staff training materials, and internal processes to consistently enforce UPC and IRC provisions. After implementation of these criteria and process changes, staff will evaluate whether changes to the IRC are warranted and present any proposed changes in an out-of-cycle local amendment or during the 2024 code adoption cycle. Staff will continue to explore the legal and staffing implications of a new nuisance provision in Title 9, and if warranted, develop proposed changes for Council's consideration. Council would consider adoption of new provision(s), if any.

2.e.4. Encourage communities upstream of Austin to adopt improved drainage and floodplain regulations

Austin community members, including a recommendation by the Flood Mitigation Task Force (FMTF), have called for the strengthening of drainage regulations in areas outside the City of Austin's jurisdiction. Recommendation 6.5 in the FMTF Final Report was as follows:

> "Encourage collaboration with surrounding communities to adopt floodplain and storm drainage policies comparable to the levels of City of Austin."[1]

The goal is to have areas that are upstream of Austin—and thus contribute flood flows through Austin—have robust, preventative regulations such that existing conditions are not worsened as these areas urbanize and change drainage patterns.

Austin has a collaborative, proactive relationship with Travis County to coordinate development review and regulation development for areas within Austin's extraterritorial jurisdiction (ETJ) within Travis County. And Travis County typically extends these requirements beyond our ETJ into county areas as well. An example is the adoption by Travis County of code amendments that use the current 500-year floodplains as the regulatory 100-year floodplains on an interim basis until new floodplain maps can be developed using Atlas 14 rainfall data. Austin is working with many regional partners on updating floodplain studies in the Central Texas region, such as Travis County, Hays County, Bastrop County, and many other independent cities.

An additional, more recent opportunity has emerged with the initiation by the State of Texas of a new State Flood Plan, administered by the Texas Water Development Board (TWDB). For this planning process, which kicked off in October 2020, Austin is located in the Region 10 Lower Colorado-Lavaca River planning area. Austin has a representative on the 13-member Planning Team. The scope of work for this project already calls for use of forecasting to anticipate and plan for future growth, and the City's representative will advocate for additional regulatory improvements consistent with the FMTF

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[1] *Flood Mitigation Task Force: Final Report to Austin City Council*, http://www.austintexas.gov/edims/document.cfm?id=254319, May 16, 2016, p. 32.

recommendation. Region 10 and the other 14 state regions have an approximately two-year schedule, with a draft Regional Flood Plan for each region due to the TWDB in January 10, 2023. The Region 10 plan could help coordinate and improve the flood management of cities and counties in the entire basin, which would include the City of Austin and all of its upstream and downstream neighbors.

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3. Resilient and Equitable Community Plan: Scope of Work

Resolution: The City Manager is directed to take the following steps to increase flood protection and flood resiliency:

Develop a scope of work around the implementation of a resilient and equitable community plan to address the economic and social recovery of individuals experiencing devastating impacts from flood events in Onion Creek, Walnut Creek, Shoal Creek, Williamson Creek, Bull Creek, and other City watersheds no later than April 30, 2021. This should include potential funding strategies while considering engagement with local businesses, community organizations, schools, hospitals/medical facilities, agriculture all and owners, and others who could be affected by floods within Onion Creek, Walnut Creek, Shoal Creek, Williamson Creek, Bull Creek, and other City watersheds.

Topline Recommendation. The recommendation of our Resilience Core Team is to support the requested planning activities by establishing a "standby" time and materials contract with a not-to-exceed amount with a contracted entity with expertise in the subject matter (equitable, economic, and social recovery planning). We recommend this type of contract for the following reasons:

1) This type of contract would allow a contracted entity to bill for reimbursement only for services completed up to the not-to-exceed amount.
2) The contracted entity itself would help secure external funding sources to support activities for reimbursement and act as grant manager for awards.
3) This type of entity could supplement current staffing for resilience (current internal staffing levels for resilience = 1 full-time position), which would not allow for such planning activities to be completed internally.

Scope. We recommend the following activities to be undertaken to meet the expressed need for an equitable economic and social recovery plan:

- *Reconciliation* of resulting data, reports and recommendations of past related engagement processes such as but not limited to: Climate Action Plan led by the Office of Sustainability, Resilient Dove Springs led by GO Austin!/VAMOS Austin (GAVA), the Economic Recovery Framework led by the Economic Development Department, as well as relevant existing programs or concepts being developed within the City that could assist in providing social and economic recovery such as the Austin Civilian Conservation Corps program (Office of Innovation), the Rain Catcher Program concept (Watershed Protection Department), Circular Economy Hub (Austin Resource Recovery/Economic Development Department).
- *Community Asset Map.* Creation of a community asset status map that is focused on social resilience and economic resilience - this map would take into consideration physical assets and social vulnerability.
- *Creation of a community panel or panels.* This may involve reconvening of past community panels and establishing new panels if further exploration of issues are necessary beyond work already completed.
- *Validation of the asset map* with the community panel(s).

- *Recovery Summit.* Convene with relevant communities a Recovery Summit to ID all current work that is in planning and cross walk with long term goals that the community has identified, ID what is in alignment or missing; provide access to stakeholders on the processes of recovery, recovery project examples from other regions that could be of use for the geographies of interest.
- *Preliminary Gap Analysis.* Develop a preliminary gap analysis on what is missing with regard to economic and social resilience, this would include individual economic resilience and geographically nuanced identification of strategies.
- *Agenda-setting Workshop.* Conduct an agenda setting workshop that is meant to be a place for community members and stakeholders to build out priorities, this would involve the community panel(s) but be more broadly available to the general public, its focus would be to establish a first year prioritization for strategies, and planning for periodic check ins on progress.
- In addition, we recommend that the scope of the recommended consulting contract include:
    - Ongoing assistance with funding discovery (includes external funding such as grants, and internal funding such as planning budgets, application processes, and grant management to support the above activities and reimbursement for work conducted by the contracted entity;
    - Management of cost recovery such that it is permissible and reimbursable under funding sources - so that it eventually becomes low cost to the City.
    - Wherever possible, alignment and coordination with the timeline and activities, with the Watershed Protection Department's (WPD) forthcoming departmental strategic planning activities.
    - Creation of appropriate inputs to be included in the City's forthcoming Comprehensive Resilience Plan.

The cost for the above activities is estimated to be able to be completed for a range of $600,000-$700,000; this, however, could be lower (down to an estimated $200,000) if a municipality has already conducted or is otherwise conducting community engagement that could inform this planning process. (Examples of such contracts exist in our system, for instance, an existing contract with Hagerty Consulting, currently employed by Homeland Security and Emergency Management (HSEM).)

Costs may indeed fall below the maximum estimated cost amount for this work as both the City of Austin and the Austin community have already conducted some relevant planning and community engagement activities. We have included the first item above, to be respectful of our staff and community's past work, to guard for assessment and engagement fatigue, and to make sure that past identified solutions are moved forward.

Funding Sources. The Resilience Core Team has preliminarily explored existing City contracts with relevant entities, internal funding sources, and known relevant external funding sources to determine if these could support the requested planning, the Resilience Core Team found the following:

- *HSEM contract with Hagerty Consulting.* Although Hagerty Consulting is an entity with relevant expertise for the requested planning, the current existing contract scope is narrowly COVID related and could not support these activities.
- *Housing and Planning Department (HPD), existing FY '21 federal funding.* Although activities would be in scope as per funding rules, the current award has already been approved for other activities by the funding source and cannot be currently amended.
- *Drainage (Utility) Fee.* WPD's Drainage Fee is a possible source of funding to support these activities, further exploration of legal allowance is necessary to occur between City legal and WPD.

- *FEMA Building Resilient Infrastructure and Communities (BRIC).* Preliminarily, planning activities requested could be of scope for this funding opportunity, this opportunity is expected to open for application in late August or September 2021.
- *National Oceanic and Atmospheric Administration.* This entity has released many resilience related grants over time, particularly related to climate change. A general grant may be available for the planning under the administration's long term mission goal of a "weather ready nation". This is a source that would be requested for discovery activities.

Next Steps. The Resilience Core Team and the WPD seek direction from Council on the latter recommendations for requested activities before proceeding. With further direction, the City Manager would determine staffing assignments relevant to Council direction.

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4. Watershed Protection Strategic Planning Process: Managing Flood Risk for Safety, Resilience, and Equity

Resolution: The City Manager is directed to take the following steps to increase flood protection and flood resiliency:

1. *Refine and expand existing strategies to manage flood risk for safety, resilience, and equity as part of the planning process to revise the Watershed Protection Strategic Plan to be started in spring 2021. This should include funding strategies, potential partnerships with stakeholders affected by floods, and potential acquisition of open space.*

This section describes the planning process that will be used to revise the Watershed Protection Strategic Plan to expand strategies to manage flood (and erosion and water pollution) risks for safety, resilience, and equity.

Watershed Mission and Strategic Plan: The mission of the Watershed Protection Department (WPD) is to protect the lives, property, and environment of our community by reducing the impact of flooding, erosion, and water pollution. The Watershed Protection Strategic Plan (Strategic Plan) is the guiding blueprint for the department. It sets goals and objectives for WPD's work, establishes the method to prioritize watershed problems, and establishes procedures for how solutions are identified. It provides a framework for evaluating future programs, projects, and regulations as well as measuring the success of our current portfolio. The plan will, among other things, discuss potential funding strategies, partnerships, and open space acquisition, as directed in the resolution. The Strategic Plan also helps explain WPD's work and priorities to staff, City executives, Boards, Commissions, and Council, and the Austin community.

Goals: WPD has three main goals for the Strategic Plan update, subject to community input:

1. Reflect Community Values
2. Incorporate Equity and Climate Resilience
3. Be Accessible and Informative

Community Engagement: A robust community engagement process is an essential component of the Strategic Plan update. Every Austinite is impacted by the waterways flowing through our city, and any resident might possess knowledge and lived experience about flooding, erosion, or water pollution that could help WPD do its work in a better-informed and more effective way. As staff updates the Strategic Plan, we will look to the Austin community to help shape the core values, goals, and priorities that will form the foundation of the new plan, using the following community engagement goals:

1. Be Respectful to Participants
    - Make it easy and enjoyable to contribute input, particularly for those who have barriers to participation. Use an approach to engagement that is inclusive and culturally sensitive.
    - Be transparent about how feedback is being used. Respect participants by only seeking feedback that can and will be used to inform a decision. If a specific community recommendation cannot be incorporated into the plan, clearly explain the reason.
2. Create an Adaptive Process
    - Define success metrics for the engagement process, track our performance, and commit to continuing engagement until we have met our metrics for success.
    - Adapt to potential limitations on engagement strategies due to COVID-19 and be sensitive to the impacts on participants.
3. Focus on Relationships
    - Build relationships and trust with organizations, leaders, and individuals in historically underserved groups and groups disproportionately impacted by negative watershed outcomes.

Stakeholders: We want to hear from our entire community. Focused attention will be given to reaching the following priority groups:

1. Austin residents left out of past planning and decision-making processes or more likely to experience negative quality of life outcomes (people of color, low-income persons, and others).
2. People who have experienced or are at an increased risk of negative watershed outcomes (flooding, erosion, water pollution) or who were affected by a recent watershed project.
3. Entities whose missions prioritize the environment and that bring environmental, technical, and/or policy expertise.

Community Engagement Strategies: Staff plans to use a variety of strategies for this community engagement process. Where possible, we will employ both in-person and virtual methods, as appropriate based on audience, engagement objectives, and City guidance regarding the safety of in-person gatherings given the status of COVID-19. We will utilize more resource-intensive, focused strategies to engage priority stakeholders and broader strategies for the entire community. We will reach stakeholders via diverse platforms such as Quality of Life Commissions, religious organizations, advocacy groups, social service organizations, and standard and social media. We also anticipate enlisting community ambassadors to help us connect with priority stakeholders. We will minimize barriers to participation by facilitating language access, providing food and children's activities, offering engagement options for those without internet access, holding events at locations accessible via public transportation, and scheduling events at a variety of times of day and days of the week.

Staff and Consultant Resources: WPD staff will manage most of the planning process and will be responsible for drafting the revised plan. WPD will also engage staff from other City departments on an interdepartmental advisory group. Key internal stakeholders will include the City's Equity Office and Chief Resiliency Officer, to ensure that the Strategic Plan aligns with the citywide Resilient Austin initiative. WPD plans to request funding to hire consultants for specific community engagement tasks, including: a statistically valid survey, community ambassadors, focus group facilitation, and language access.

Draft Timeline: WPD staff are currently in the pre-planning phase for the Strategic Plan update. We hope to finalize a detailed Community Engagement Plan this spring and kick off the engagement process in the summer or early fall 2021. We envision two rounds of community engagement running for about a

year. We will start the process of plan development as soon as possible, but it will depend on what we're learning from community engagement. The preliminary goal is to finish the draft Strategic Plan document by fall 2022 and go through the review and adoption process in late 2022 and early 2023.

	FY2021				FY2022				FY2023	
Phase	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
Pre-Planning										
Community Engagement Rounds #1 & #2										
Plan Development										
Community Engagement Round #3 / Document Adoption										

WPD staff look forward to engaging with the entire community in the essential conversations to understand community values, set goals and objectives for our work, re-examine methods to prioritize watershed problems, and evaluate how solutions are identified. By adding important new elements to address equity and climate resilience, we believe we will be in a better position to serve our community. We hope to partner with Council offices on engagement strategies and events to best serve your constituents. Staff is currently working on a detailed Community Engagement Plan; we will provide a follow-up memo with additional information and next steps in the early summer, 2021.