

City of Ann Arbor Environmental Commission Floodplain Management Overview March 2023



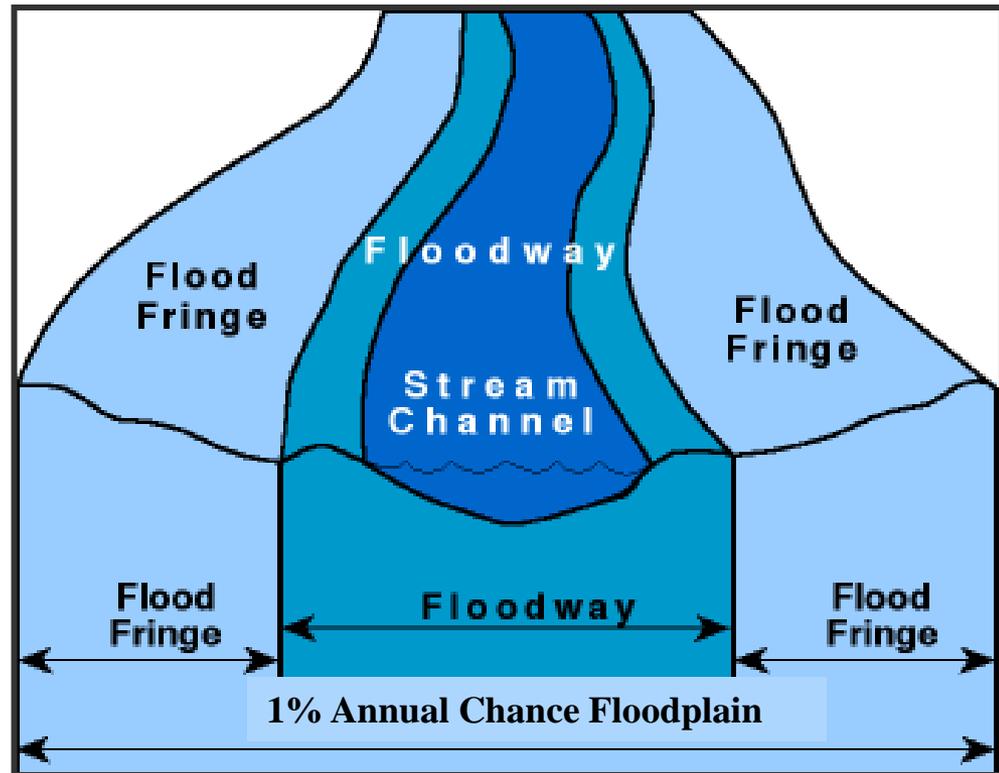
Jerry Hancock

Stormwater and Floodplain
Programs Coordinator

www.a2gov.org/floodplains

What is a Floodplain?

- Consists of a floodway and a flood fringe
- A 100-year floodplain has a 1% chance of flooding every year
- Doesn't mean once every hundred years
- 1% Annual Chance



Flood Insurance Rate Map (FIRM)

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0242E

FIRM
FLOOD INSURANCE RATE MAP
WASHTENAW COUNTY,
MICHIGAN
(ALL JURISDICTIONS)

PANEL 242 OF 585
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANN ARBOR	260535	0242	E
CHARTER TOWNSHIP OF ANN ARBOR, CITY OF	260213	0242	E
BARTON HILLS, VILLAGE OF	261154	0242	E
SCIO, TOWNSHIP OF	260537	0242	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

 MAP NUMBER
26161C0242E
EFFECTIVE DATE
APRIL 3, 2012

Federal Emergency Management Agency

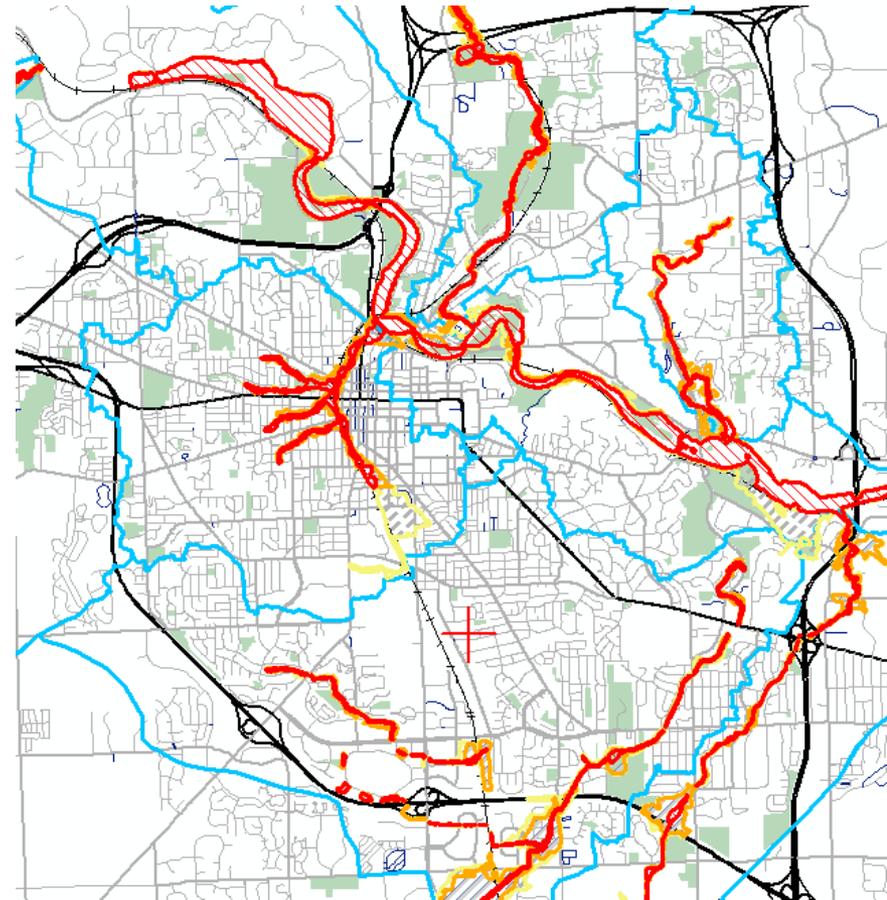
- FEMA FIRMs
 - FIRMs show the flood hazard area and floodways
- FEMA Flood Insurance Study (FIS)
 - The FIS includes flood elevation and profiles

Floodplain quantities per FIRM dated April 3, 2012

Total Floodplain Area 2.79 sq miles or 10% of the City, 1035 Parcels with Floodplain Area

of Structures by FEMA Flood Source Segment

FEMA Flood Source	# of Structures
Allen Creek	389
• Allen Creek Main Branch =	216
• Eberwhite Drain Overflow =	73
• Murray Washington Overland Flow =	73
• West Park Miller Drain Branch =	21
• West Park Miller Drain South Branch =	6
Malletts Creek	59
• Malletts Creek Main Branch =	43
• Northwest Branch Malletts Creek =	14
• West Branch Malletts Creek =	2
Swift Run Drain	29
Traver Creek	23
Huron River	23
Millers Creek	4
TOTAL	527



National Flood Insurance Program

- Flood Insurance is required for structures in the floodplain when there is a federally backed mortgage.
- NFIP is currently \$20.5 Billion in debt (Jan. 2023)
- The Biggert-Waters Flood Insurance Reform Act of 2012
Moving from subsidized rates to actuary rates
- Homeowner Flood Insurance Affordability Act of 2014
Turned back to subsidized rates for SFR
Approximate rate increases for Pre-FIRM structures
 - Primary Single Family Resident – 18% per year
 - All others – 25% per year until they reach actuary
- Risk Rating 2.0 (2022)
New pricing methodology leverages industry best practices and cutting-edge technology to enable FEMA to deliver rates that are actuarially sound, equitable, easier to understand and better reflect a property's flood risk.

Community Rating System

- The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.
- As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS:
 - 1.Reduce flood damage to insurable property;
 - 2.Strengthen and support the insurance aspects of the NFIP, and
 - 3.Encourage a comprehensive approach to floodplain management.

The table below shows the credit points earned, classification awarded and premium reductions given for communities in the NFIP CRS.

CREDIT POINTS	CLASS	PREMIUM REDUCTION SFHA*	PREMIUM REDUCTION NON-SFHA**
4,500+	1	45%	10%
4,000 – 4,499	2	40%	10%
3,500 – 3,999	3	35%	10%
3,000 – 3,499	4	30%	10%
2,500 – 2,999	5	25%	10%
2,000 – 2,499	6	20%	10%
1,500 – 1,999	7	15%	5%
1,000 – 1,499	8	10%	5%
500 – 999	9	5%	5%
0 – 499	10	0	0

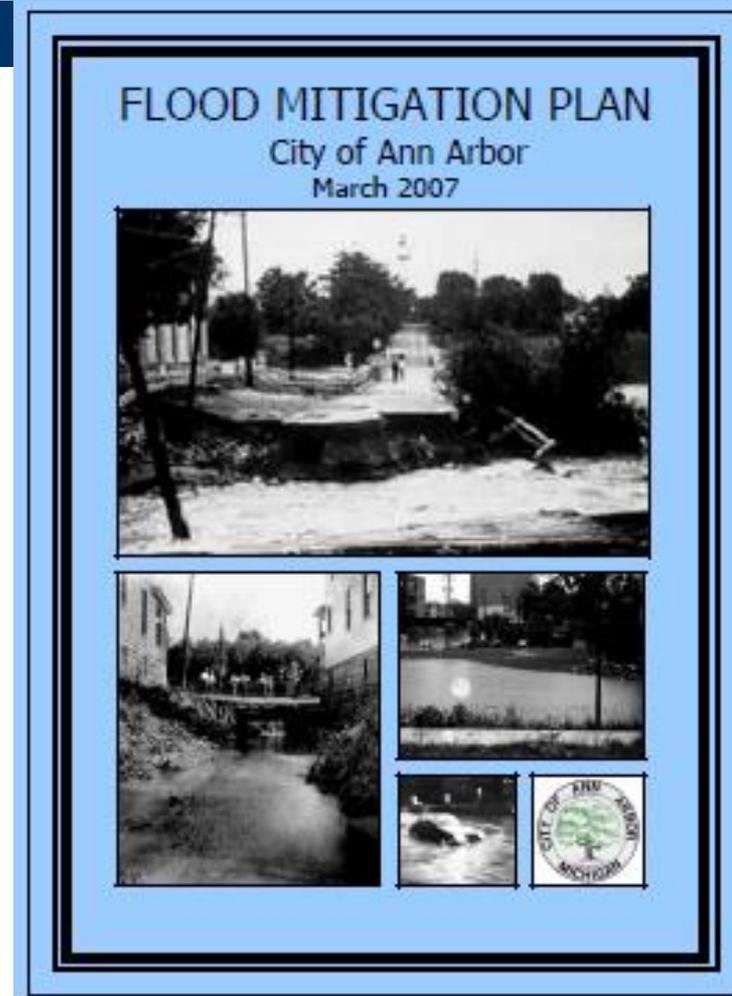
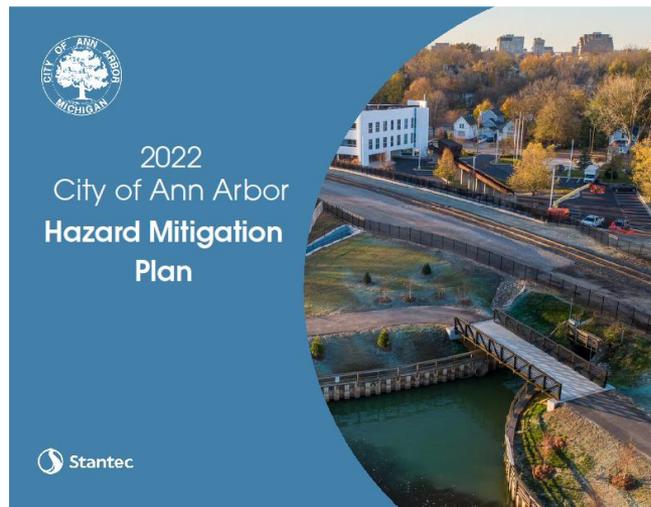
*Special Flood Hazard Area

**Preferred Risk Policies are available only in B, C and X Zones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. The CRS credit for AR and A99 Zones are based on non-Special Flood Hazard Areas (non-SFHAs) (B, C and X Zones). Credits are: classes 1-6, 10% and classes 7-9, 5%. Premium reductions are subject to change.



Flood Mitigation Plan

- 2007 Flood Mitigation Plan
- 2012 Hazard Mitigation Plan
- 2017 Hazard Mitigation Plan Update
- 2022 Hazard Mitigation Plan Update



Efforts since 2007

- 2005-2012 - FEMA Map Mod process
- 2008-2013 - 2 FEMA Mitigation Grant Projects:
219 W Kingsley St. and 721 N Main St.
- 2009-2018 - Join the Community Rating System and improved to Class 6
- 2007-2021 – Floodplain Management Overlay Zoning District
- 2015-Present - Hazard Mitigation Grant project:
Allen Creek RR Berm Opening

ACRRBO

721 N. Main St

219 W. Kingsley St.
Fish Park



Changing Weather Patterns

- **Temperature** – Increasing
 - Frost-free season longer
 - Less snow cover
 - More winter rain
- **Precipitation** – Increasing frequency and intensity of extreme storm events
- **Runoff** - more variable, decreasing during dry periods and increasing with more intense precipitation events



Geographic Location	S.E. Michigan Non-Coastal
Population	113,934
Government Structure	Council-Manager
Per Capita Income	\$30,498 (USD)

City Fact Sheet: Ann Arbor, MI

The City of Ann Arbor has a long history as a progressive city with strong community engagement. Despite this, the city faces challenges keeping the community informed of emerging programs and ongoing efforts due to the city's many university students and other transient residents. Ann Arbor also faces the challenge that a significant percentage of property within the city limits falls under the public domain and is not subject to local taxes. Much of this public land also falls outside of the city's regulatory jurisdiction.

CLIMATE IMPACT

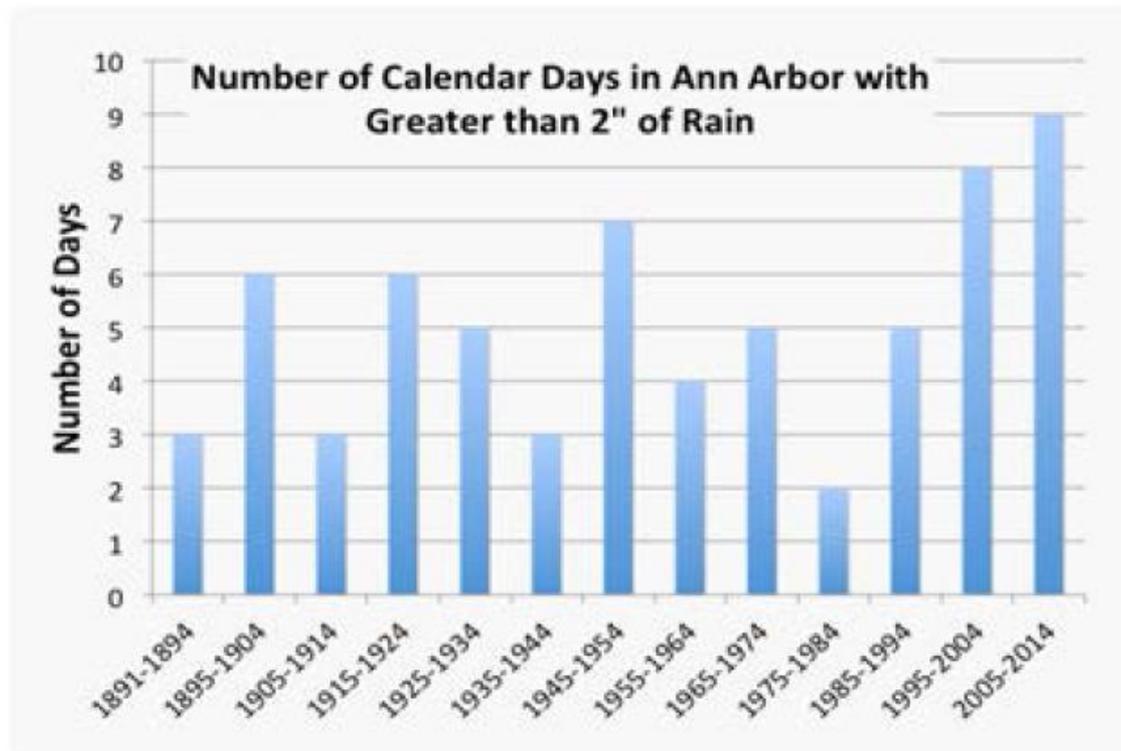
1°F Increase in Annual Temperatures (from 1951-2012)

6.1 Fewer Days Below 32°F (from 1951-2012)

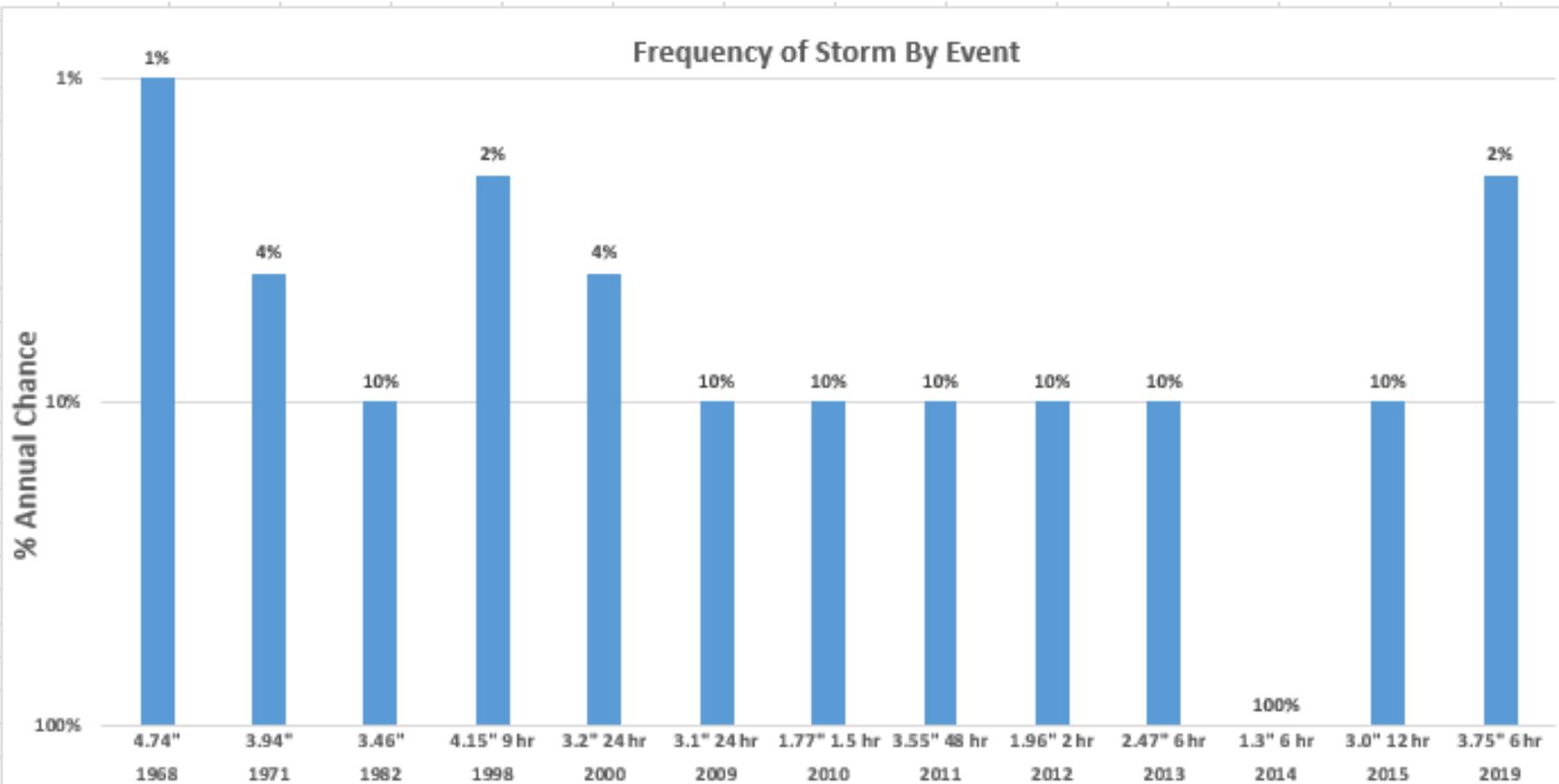
41.2% Increase in Heaviest 1% of Precipitation Events (from 1951-2012)

44.8% Increase in Annual Precipitation (from 1951-2012)

Changing Weather Patterns



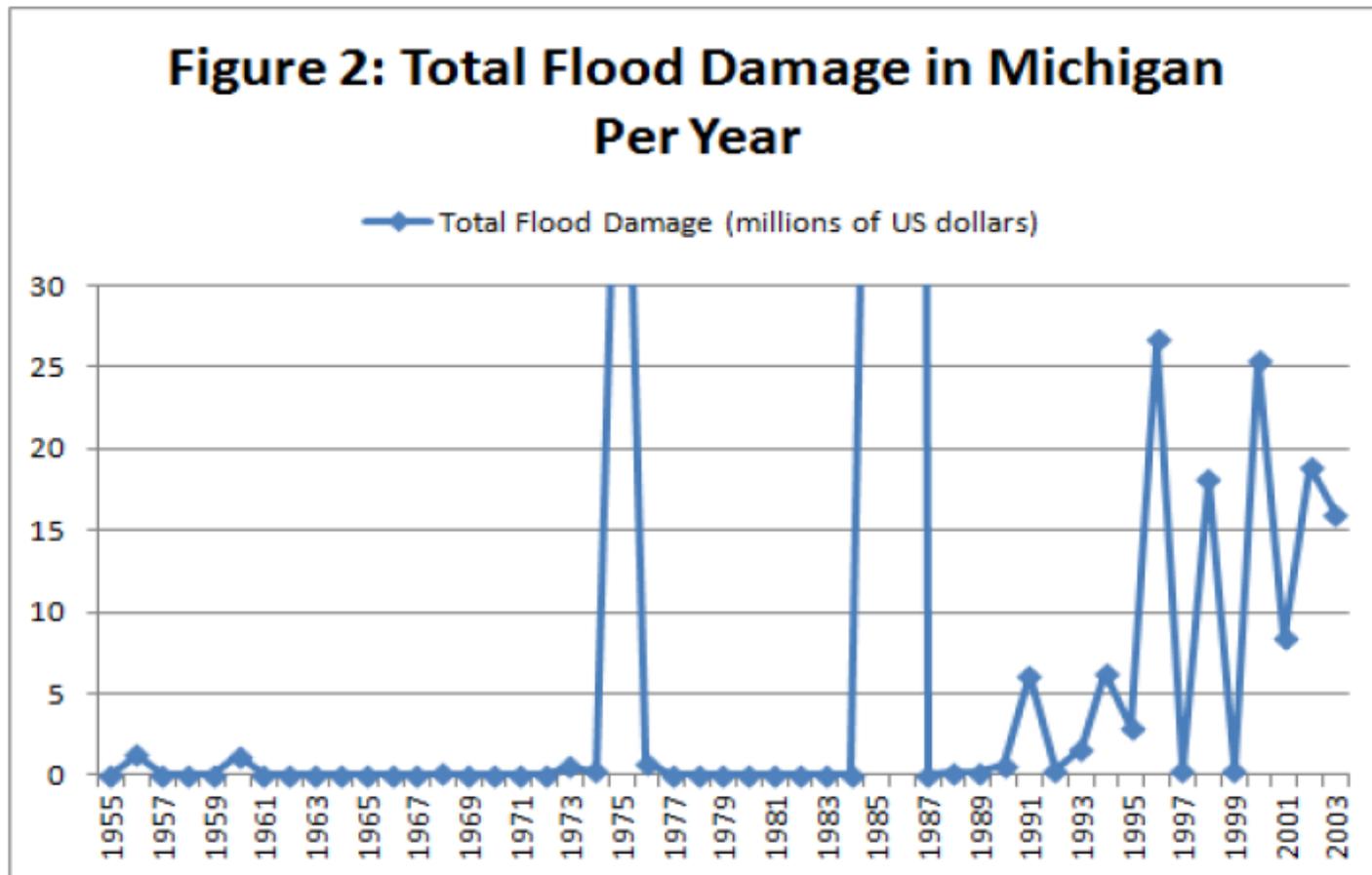
History of Flooding in Ann Arbor



NOAA Storm Frequencies for A2

- Current Flood Maps based on 1992 Bulletin 71
– 24 Hour 1%-annual-chance = **4.36”**
- 2013 NOAA Atlas 14, Volume 8
– 24 Hour 1%-annual-chance = **5.11”**
- **Difference = 0.75” or 17.2% increase**

Rising Economic Flood Damage



City Calibrated Stormwater Model Results

		Total	Allen	Malletts	Millers	Swift	Traver
FEMA Effective	Acres	717	126	241	50	199	101
	Buildings	500	390	55	4	29	22
	Parcels	923	486	229	25	123	60
Model Delineated	Acres	1143	203	379	62	297	202
	Buildings	739	520	129	6	61	23
	Parcels	1259	639	377	26	144	73
Difference	Acres	426	77	138	12	98	101
	Buildings	239	130	74	2	32	1
	Parcels	336	153	148	1	21	13

City Calibrated Stormwater Model Results

Future Scenario - If all single family homes had a rain garden, all private and U of M property were redeveloped to meet current local stormwater standards, and all streets were reconstructed to meet the green streets policy:

- Major water quality improvements
- Significant reduction of flooding for small events
- Most flooding eliminated up to the 10%-annual-chance
- However, there would still be a 1%-annual-chance floodplain similar to the current floodplain, particularly in Allen Creek, and only a slightly smaller floodplain in other watersheds.

Floodplain Management Overlay Zoning District

January 2021

Floodway Prohibitions

Critical Facilities.

New or expanded residential uses.

New Buildings, except in the case of redevelopment that meets the criteria in Section 5.14.2H.4.

Additions that expand the Building footprint of any existing Structure if any portion of the Structure is to remain in the Floodway.

Modifications to an existing Building that would increase the enclosed Floor Area of the Building.

Creating habitable space below the Flood Protection Elevation in existing Structures, such as Basement conversions.

Egress windows and doors below the Flood Protection Elevation.

New Accessory Buildings, garages, sheds, dumpsters, and fences.

Structures without a foundation such as: House Trailers, construction trailers, cell on wheels, and temporary facilities.

Toilets connected to the sanitary sewer system, with an elevation below the Flood Protection Elevation.

Fill within the Floodway, unless it can be demonstrated that the change will improve the Flood conveyance and Floodplain function.

Principal Use Parking Lots built at grade where the depth of flooding at the Base Flood event will exceed 2.0 feet .

Parking Lots accessory to residential uses built at grade where the depth of flooding at the Base Flood event will exceed 2.0 feet.

Construction or permanent storage of an object subject to floatation or movement during flooding.

Storage of toxic, flammable, hazardous, or explosive materials.

New solid or hazardous waste disposal facilities.

Floodplain Management Overlay Zoning District January 2021

Flood Fringe Prohibitions

Critical Facilities.

New solid and hazardous waste disposal facilities.
Nonresidential storage of highly toxic, flammable, hazardous, or explosive materials.

New Structures without a foundation such as House Trailers, construction trailers, cell on wheels, and temporary facilities.

Egress windows and doors below the Flood Protection Elevation.

Toilets connected to the sanitary sewer system, with an elevation below the Flood Protection Elevation.

Construction or permanent storage of an object subject to floatation or movement during flooding.

Structures or fill prohibited by any other statute, regulation, or underlying zone.

Questions

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