

Stakeholder Meeting 5

Cumulative Impacts of Development on Flood Risk

Presented by: Ben Thompson, Professional Engineer

February 19, 2023

Agenda

1. Stakeholder Group Summary
2. Valley Storage Policy Recommendation
3. Impervious Cover Recommendation
4. Next Steps

External Stakeholders

Michael Whitson, Insurica, CD9
Bernie Malone - VP Monticello NA / CD7
Stacy Shores – Pres., Linwood NA
Travis Clegg – DAC Chair
Tom Davies – Hillwood / CD4
Dawn Dean – Handley
Misty Christian – Kimley-Horn and Associates, Inc.
Don Allen – Fort Worth Homebuilders Association
Larissa Knapp-Scott – LJA Engineering

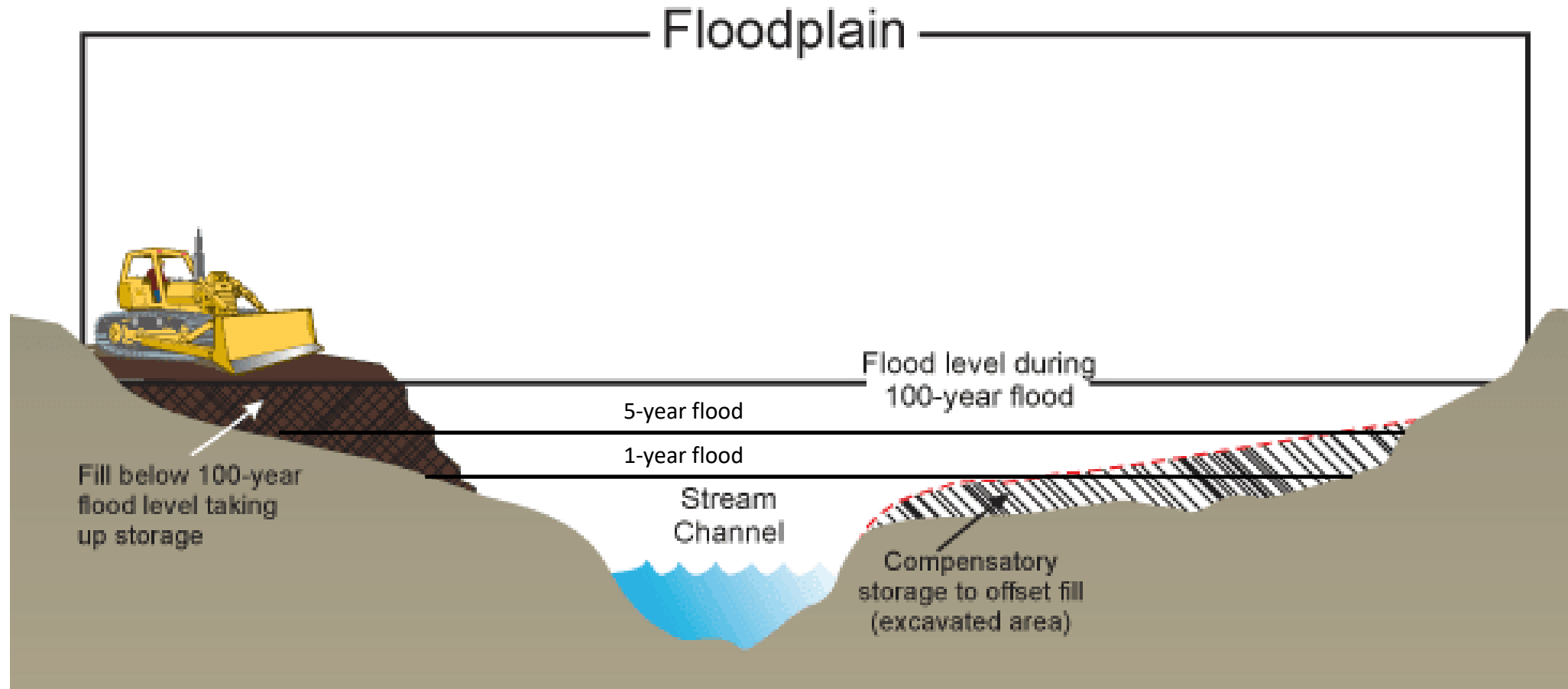
Internal Stakeholders

Leon Wilson – Development Services
Amy Connolly – Neighborhood Services
Michael Crenshaw – 360Clarus / CFW Contractor
Stephen Murray – Development Services
Clair Davis – FW Lab
Ben Thompson – TPW Stormwater Management
Royce Hansen – Legal

Stakeholder Group Summary

- **Previous stakeholder meetings:**
 - #1 – April 2023
 - #2 – June 2023
 - #3 – November 2023
 - #4 – December 2023
- **Discussed recommendations to address:**
 - Valley Storage
 - Impervious Cover
- **Policy recommendations will be sent to Council by the end of 2024**

Valley Storage Preservation Recommendation



Valley Storage Recommendation

- No loss in storage for 1-, 5-, and 100-year floods (higher of FEMA or fully-developed)
- Everywhere that a floodplain delineation is required
- Affects projects adjacent to river/streams citywide
- Policy would be implemented through floodplain ordinance and future version of stormwater criteria manual
- Recommendation details to be presented and reviewed by DAC and others prior to presenting to Council

Impervious Cover

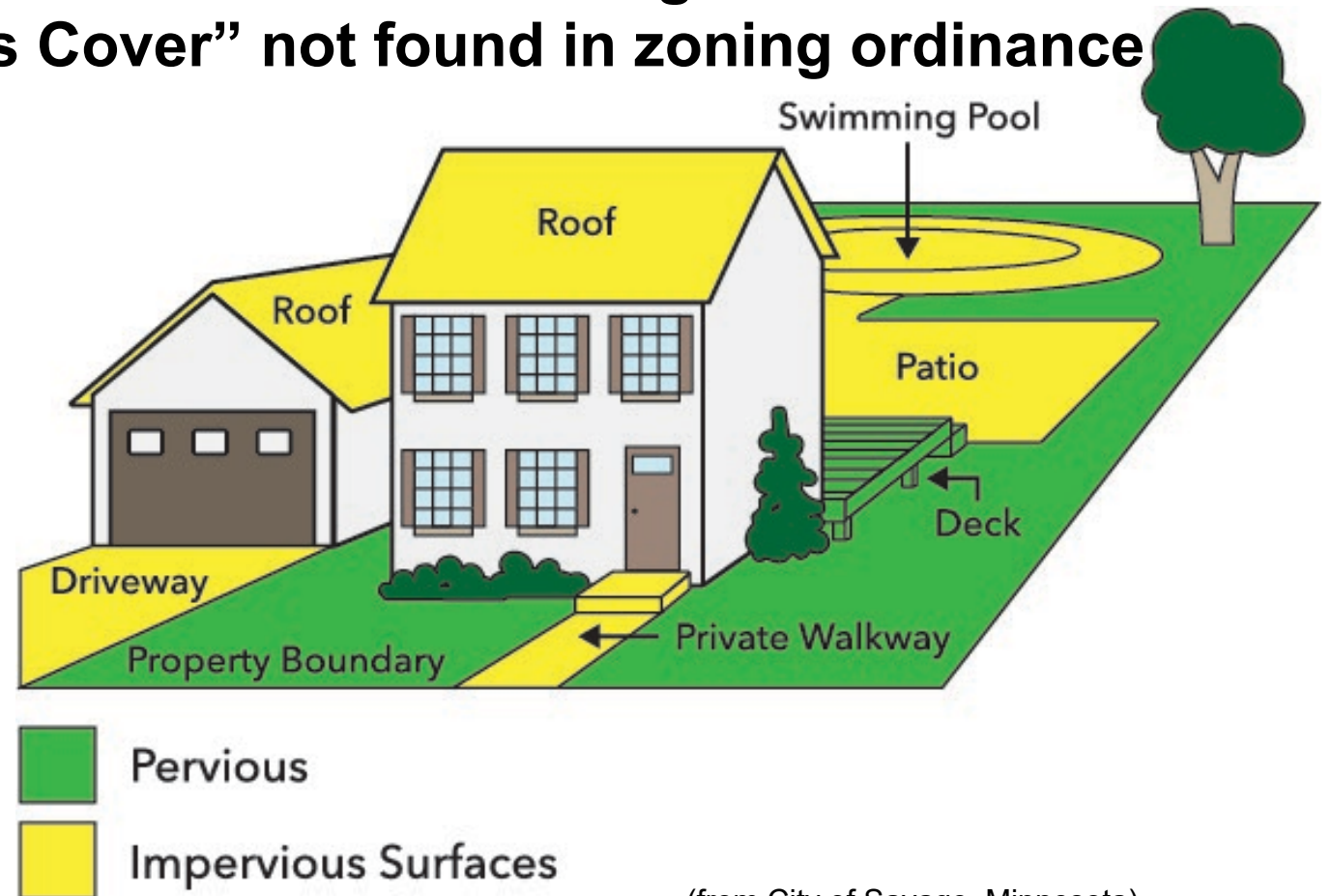
Zoning ordinance describes a max “Lot Coverage” for different zoning types. “Impervious Cover” not found in zoning ordinance

Lot coverage includes:

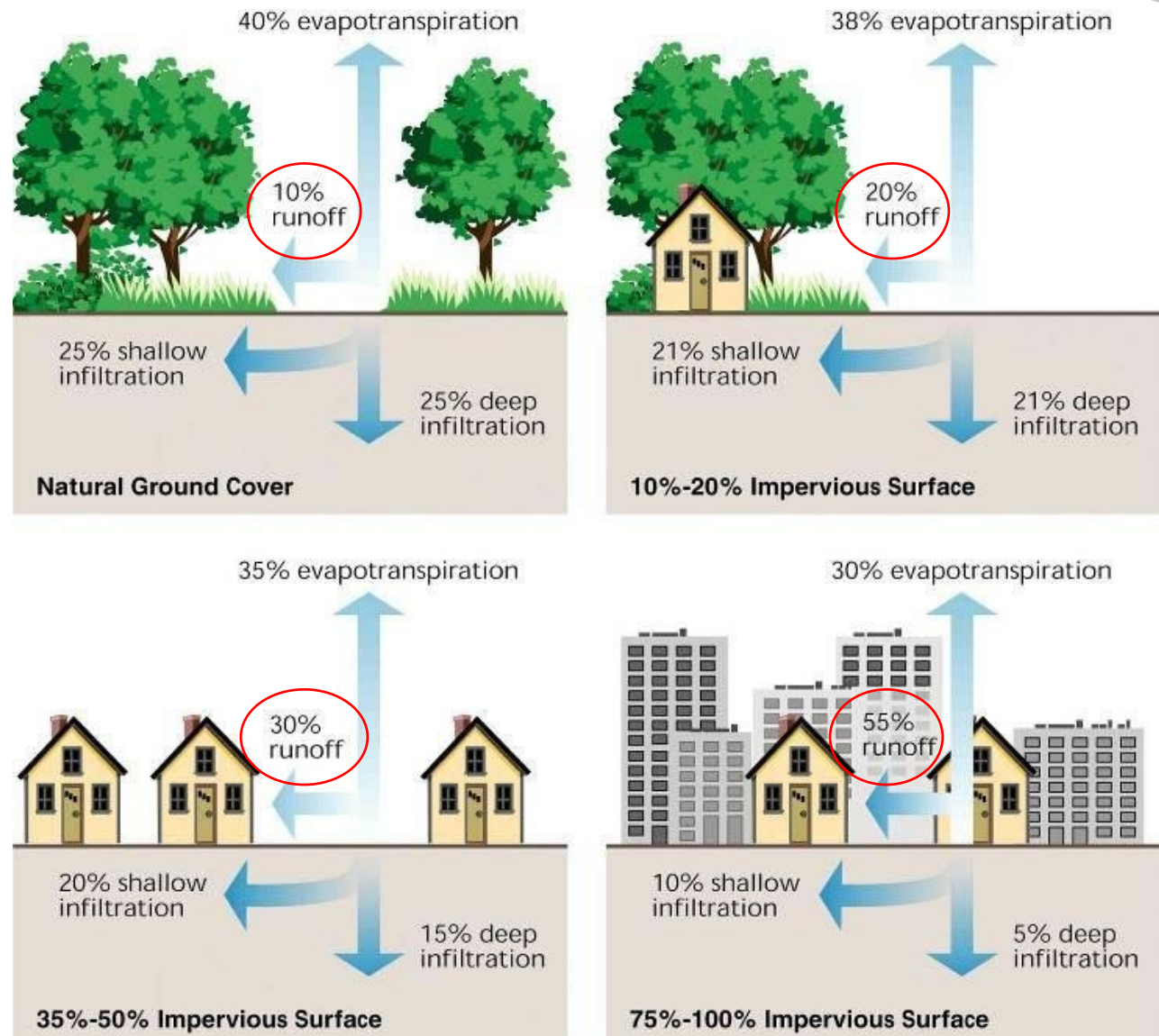
- Main structure
- Garages
- Carports
- Accessory habitable structures
- Covered porches and patios

Lot coverage does NOT include:

- Sheds
- Arbors
- Cantilevered upper story areas
- Eave overhangs
- Uncovered patios
- Pools



More cover = more flood volume and higher peak flows, which can lead to flooding

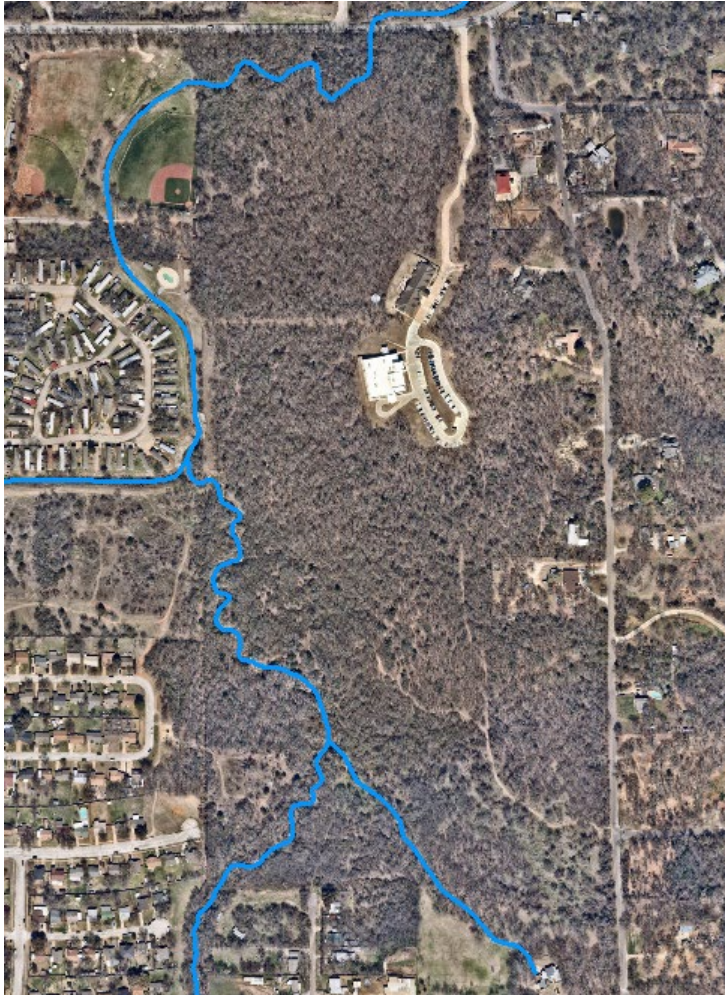


Example: Urban infill/redevelopment



Example: residential subdivision

2021



2023



1. Adjust engineering & land use assumptions to better reflect reality of impervious coverage

Current Design Manual

Table 3.5 Runoff Coefficients

Description of Land Use	% Impervious	Runoff Coefficient "C"
Residential "A-43" one-acre lots (1) (2)	35	0.51
Residential "A-21" half-acre lots	37	0.52
Residential "A-10" 10,000 SF lots	49	0.59
Residential "A-7.5" (3)	55	0.63
Residential "A-5" (3)	61	0.67
Residential "MH", "A-R", "B", "R-1", & "R-2" (3)	65	0.69
Multi-family		
"CR"	64	0.69
"C"	79	0.77
"D"	93	0.86
Commercial/Industrial/House of Worship/School		
4% Open Space (Default if no site plan)	96	0.88
10% Open Space (Site plan required)	90	0.84
20% Open Space (Site plan required)	80	0.78
Parks, Cemeteries	7	0.34
Railroad Yard Areas	29	0.47
Streets: Asphalt, Concrete and Brick	100	0.90
Drives, Walks, and Roofs	100	0.90
Gravel Areas	43	0.56
Unimproved Areas	0	0.30

Assumptions:
 (1) For Residential Calculations:
 - Current CFW development standards for minimum lot size and maximum lot coverage (structure) for each classification
 - Assumed 10.5' Parkway and 18' driveway
 - Assumed 29' B-B street dimension
 - Calculated by applying 90% runoff from impervious areas and 30% runoff from pervious areas
 (2) Calculated from designated set-backs

Zoning Classes not found in manual

Table 2. Assumed Impervious Percentages for Zoning Classes not Explicitly Identified in Table 3.5 of the Stormwater Criteria Manual.

Zoning Class and Description	% Impervious
UR - Urban Residential	90
MU-1 - Mixed Use, low intensity	90
MU-2 - Mixed Use, high intensity	90
CB - Camp Bowie	90
ER - Neighborhood Restricted, low intensity	70
E - Neighborhood, low intensity	80
F - General Commercial	90
FR - General Commercial, restricted, mod. intensity	90
FR - General Commercial, mod. intensity	90
G - Intensive Commercial, restricted	90
H - Central Business	95
I - Light Industrial	95
J - Medium Industrial	95
K - Heavy Industrial	95

1. Adjust engineering & land use assumptions to better reflect reality of impervious coverage

Stormwater Criteria Manual Table 3.5

Assumptions:

(1) For Residential Calculations:

- Current CFW development standards for minimum lot size and maximum lot coverage (structure) for each classification
- Assumed 10.5' Parkway and 18' driveway
- Assumed 29' B-B street dimension
- Calculated by applying 90% runoff from impervious areas and 30% runoff from pervious areas

(2) Calculated from designated set-backs

2. Work with Zoning to revise ordinance to define “Impervious Cover” and use that in place of or in addition to lot coverage. Could include incentives in zoning for LID features (i.e. extra floor, less parking spaces)

Appendix A: Ch 4 Zoning Article 7 starting with 4.700 One-Family

LOT COVERAGE. The total lot area covered by the foundation of the main structure, attached and detached garages, carports, porte cocheres, accessory detached habitable areas, porches, patios and entry areas compared to the total site area. Any portion of the foundation not covered by roof is not considered in lot area calculations. Sheds, arbors, cantilevered (unsupported) upper story areas, eave overhangs and uncovered patios are not considered in lot coverage calculation.

3. Revisit 50% front yard driveway limit to include entire lot

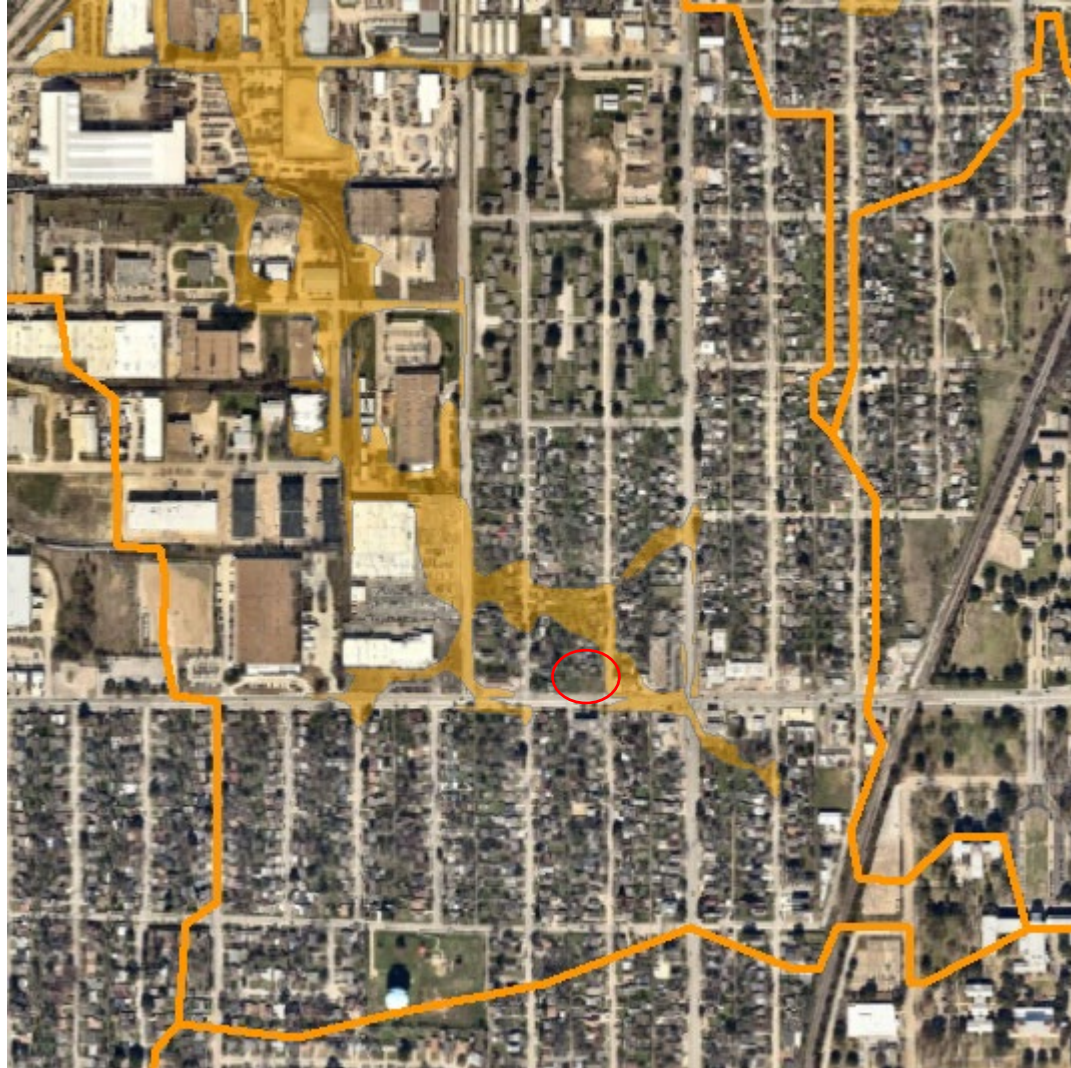
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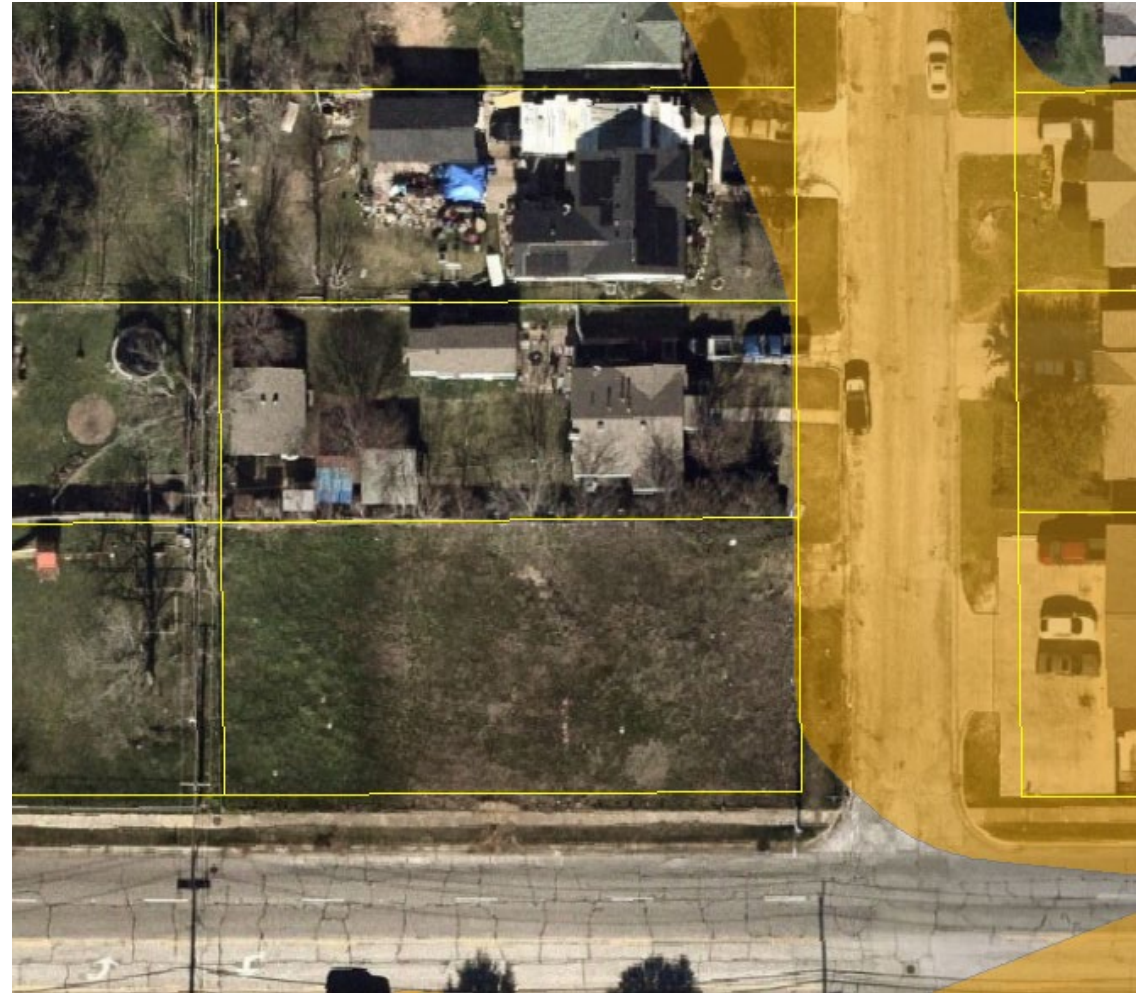
2023



4. After the City Flood Risk Area ordinance rolls out, expand the regulation area to include the contributing watershed, not just the inundation limits.



4. Volume would be regulated where only conveyance and water surface is considered now. Examples could include micro detention, LID, green infrastructure



Impervious Cover Potential Recommendations

1. Adjust engineering & land use assumptions to better reflect reality of impervious coverage
2. Work with Zoning to revise ordinance to define “Impervious Cover” and use that in place of or in addition to lot coverage.
3. Work with Zoning to revisit the 50% front yard driveway paving ordinance [Section 6.202(e)(7) Parking Lot Design Standards] to include a maximum for the entire lot
4. Will begin to regulate lots <1 acre in flood prone areas. Expand to include the contributing watershed, not just the inundation limits. (lots <1 acre)
 - Would require some amount of volume to be detained or retained (i.e. LID and GI)

Next Steps

- Draft memorandum summarizing group's recommendations for:
 - Valley Storage
 - Impervious Cover
- Staff Coordination: DAC, MITC, and possibly Zoning and Board of Adjustments for comment
- Determine updates to drainage criteria manual, policies, and ordinances
- Council Informal Report by end of 2024