

MEMORANDUM

TO: The Honorable Mayor and City Council

FROM: Michael G. Dzugan, City Manager

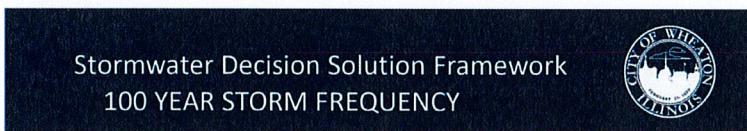
DATE: **February 19, 2021**

SUBJECT: **Flood Resiliency Investigation – Part 4**

Attached is a power point presentation that City Engineer Tebrugge will present at the Planning Session picking up where we left off – why and where does Wheaton flood, what can be done to increase flood resiliency, and information and discussion of grant funding and structure evaluations. Part 4 sets forth a “Stormwater Decision Solution Framework” and generally applies that framework to the three overland flood categories – Floodplain, Flood Prone, and Site Specific. Additionally, four specific examples within the Flood Prone areas are provided.

Two General Comments

First, the chart below is really the culmination and essence of all our work to date. It shows the dollar difference between the two approaches/solutions – Buyouts/Floodproofing versus Capital Improvement Projects.



Legend	FLOODPRONE OVERLAND FLOODING						FEMA GRANT
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	
Brickliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,739	\$11,530,000
Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)
Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400
Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,697,500
Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600
Harrison Avenue	\$0	\$787,710	\$2,938,165	\$3,231,860	\$3,941,480	\$5,560,790	\$9,456,180
Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000
Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000
Peninsula Park	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240
Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500
Delies - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550
Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745
Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845	\$1,267,558
TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000
Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094
Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000
SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,807,564	

When considering that a Capital Improvement Project will move water away from all structures on a property (dwelling unit, garage, shed, etc.), move water away from the yards, make streets within the areas more passable during a flooding event, and retains an important tax base, the dollar difference between the two approaches/solutions in most of the areas is small.

Second, we are at a point with the information and discussion to begin introducing how the City will fund a

Flood Resiliency Program. As is recommended, the next presentation should include an evaluation of funding options for financially sustaining a program.

Attachment



WHEATON MAYOR PHILIP J. SUESS

CITY MANAGER MICHAEL DZUGAN

CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

Flood Protection Program Discussion Part 4

Joseph Tebrugge – Director of Engineering

Kris Dunn – Project Engineer Stormwater

Department of Engineering

February 22, 2021



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

PART 1

- Why does Wheaton FLOOD
- Where is the FLOODING

PART 2

- What can be done to increase FLOOD RESILIENCY
- Continue Discussion towards the creation of a FLOOD PROTECTION PROGRAM

PART 3

- Grant Funding
- Structure Elevation

PART 4

- Stormwater Decision Framework



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

PART 1

- Why does Wheaton FLOOD
- Where is the FLOODING



Flood damages occur because development happened into areas that Flood BEFORE there were regulations to prevent that development from occurring.



2020 Confirmed Results	Floodplain	Flood Prone	Site Specific Flooding
Confirmed Overland Flooding	69	246	145
Percent of Total	15.0%	53.5%	31.5%



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

PART 2

- What can be done to increase FLOOD RESILENCY
- Continue Discussion towards the creation of a FLOOD PROTECTION PROGRAM



IN CONCLUSION

2020 Confirmed Results	Floodplain	Flood Prone	Site Specific Flooding
Confirmed Overland Flooding	69	246	145

GENERAL RESULTS FOR FLOODPLAIN AREAS

Buyouts	Floodproofing
\$24,500,000	\$4,500,000

GENERAL RESULTS FOR FLOOD PRONE AREAS WHEN LOOKING AT THE BCA DATA

Buyouts	Floodproofing	Capital Improvement Project
\$83,010,708	\$15,560,440	\$41,591,700

GENERAL RESULTS FOR SITE SPECIFIC AREAS

Floodproofing	Small Scale Regrading Project
\$1,450,000	\$725,000

Total	Total	Total
\$107,510,708	\$21,510,440	\$42,316,700

CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

PART 3

- Grant Funding
- Structure Elevation



SUMMARY

Prepared by: Shauna Urlacher, PE, CFM
UrbanHydro Engineering, Inc.
Shauna@UrbanHydroEng.com

Project Types	Disaster Declaration	Flood Insured	Water Quality			
	HMGP	FMA	BRIC	319	GIGO	IDNR
Buyouts	✓	✓	!	✗	✗	✓
Floodproofing	!	!	!	✗	!	✗
Infrastructure Projects	!	!	✓	✓	✓	✗

Average Cost per House

Rapid Assessment	\$3,000 to \$ 5,000
Soil/Survey/Civil Assessment	\$5,000 to \$ 7,000
Architectural Structural Assessment	\$7,000 to \$12,000
Architectural/Engineering Design	\$7,000 to \$15,000
Final A/E Design	\$7,000 to \$15,000
Mobilization/Demolition/Earthwork	\$TBD
House Elevation Costs	\$ 15,000 to \$35,000
Foundation and Improvement Cost	\$130,000 to \$185,000
Chimney/ Code Deficiencies/Utility	TBD
Patios/Decks/Stairs/Landscapes	TBD
Contingency	TBD
Soft Costs (Permits/Abatement/Relocation Costs)	TBD

**About 2-3 Times more
than initial estimate!**

Probable cost of House Elevation between \$175,000 and \$275,000

CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

PART 3

- Grant Funding
- Structure Elevation



Results

- Eliminate Structure Elevation from the Floodproofing Option
- Keep Program Investigation to 100-year storm level
- Do not use BCA as focus of program



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

PART 1

- Why does Wheaton FLOOD
- Where is the FLOODING

PART 2

- What can be done to increase FLOOD RESILIENCY
- Continue Discussion towards the creation of a FLOOD PROTECTION PROGRAM

PART 3

- Grant Funding
- Structure Elevation

PART 4

- Stormwater Decision Framework



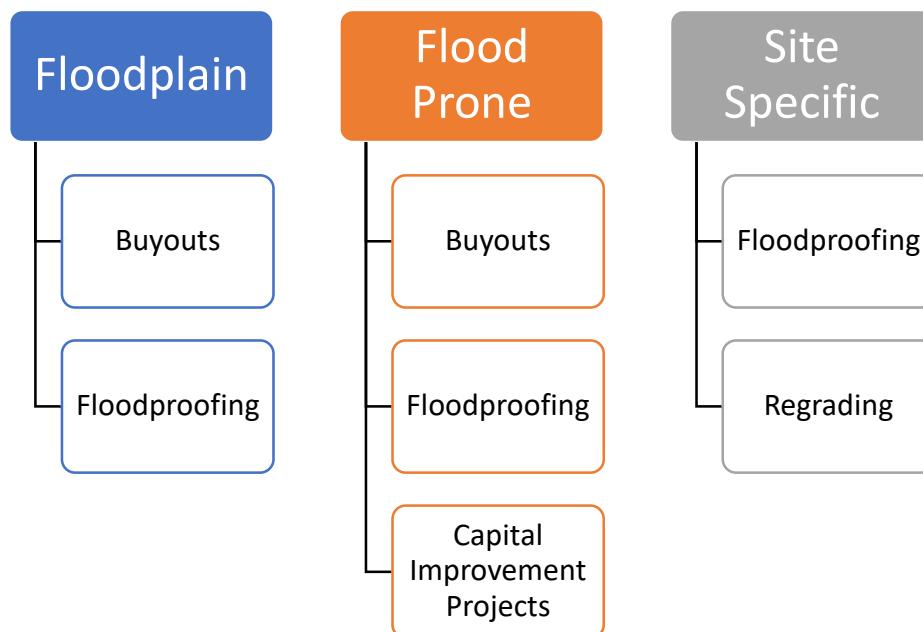
Stormwater Decision Solution Framework



What is a Decision Solution Framework?

- A formalized written document that maps out how the City of Wheaton is going to approach Stormwater Solutions for Overland Flooding across the entire City.
- Document that contains all of the qualifying requirements for when programs are eligible to the residents

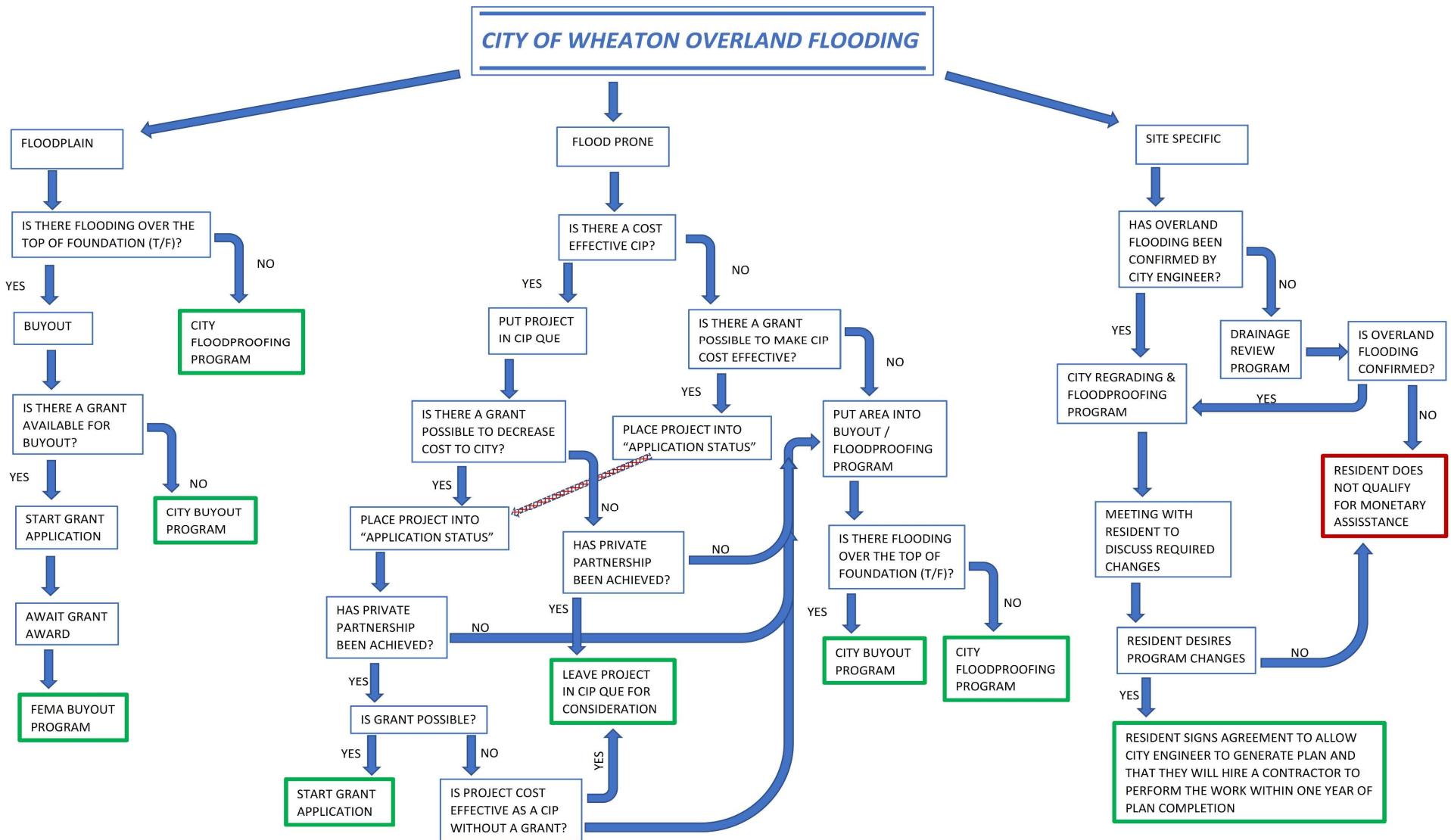
Why do we need a Decision Solution Framework?

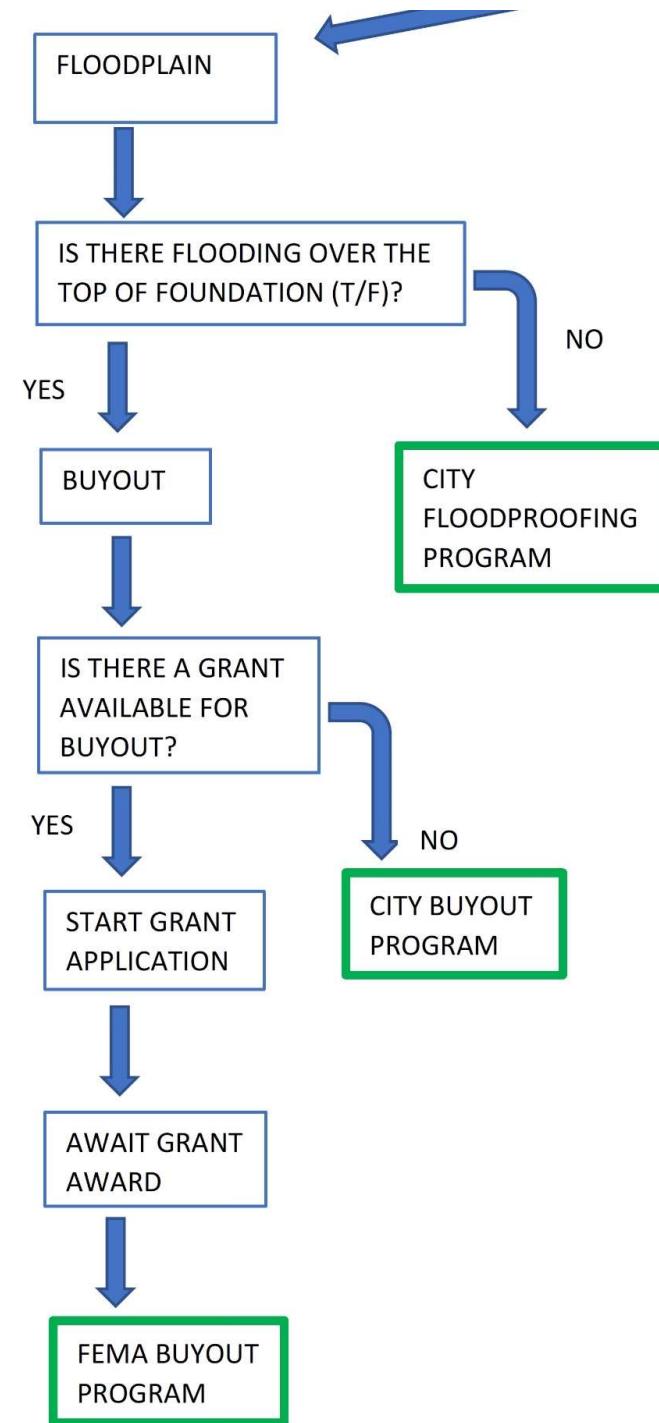


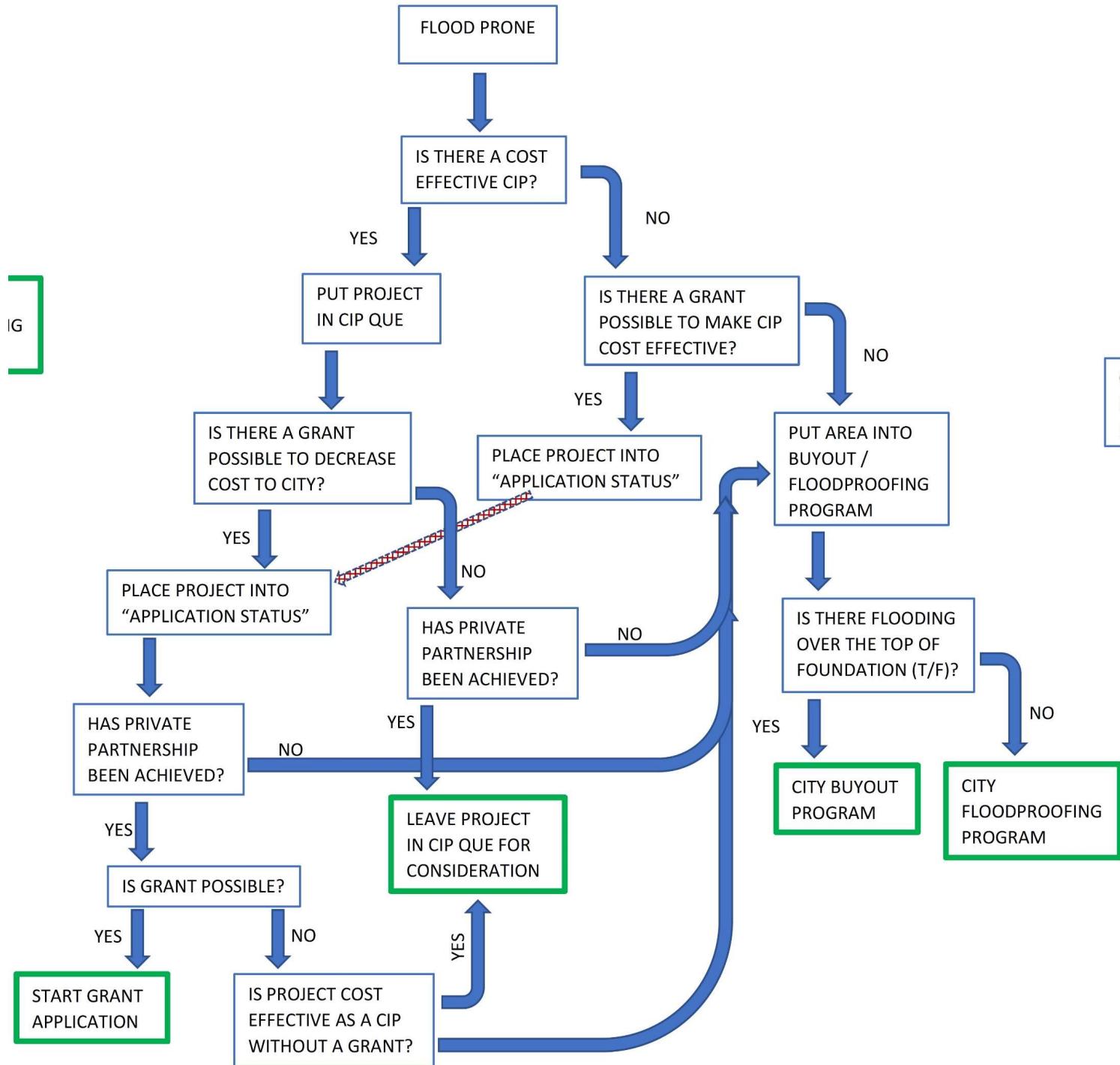
Cyclical Analysis Problem

- 1) Need decisions to figure out:
 - A) Total Cost of Program
 - B) Grant Possibility
 - C) Ability to Complete CIP
 - D) Storm Frequency of Program
- 2) Which changes decisions made in #1

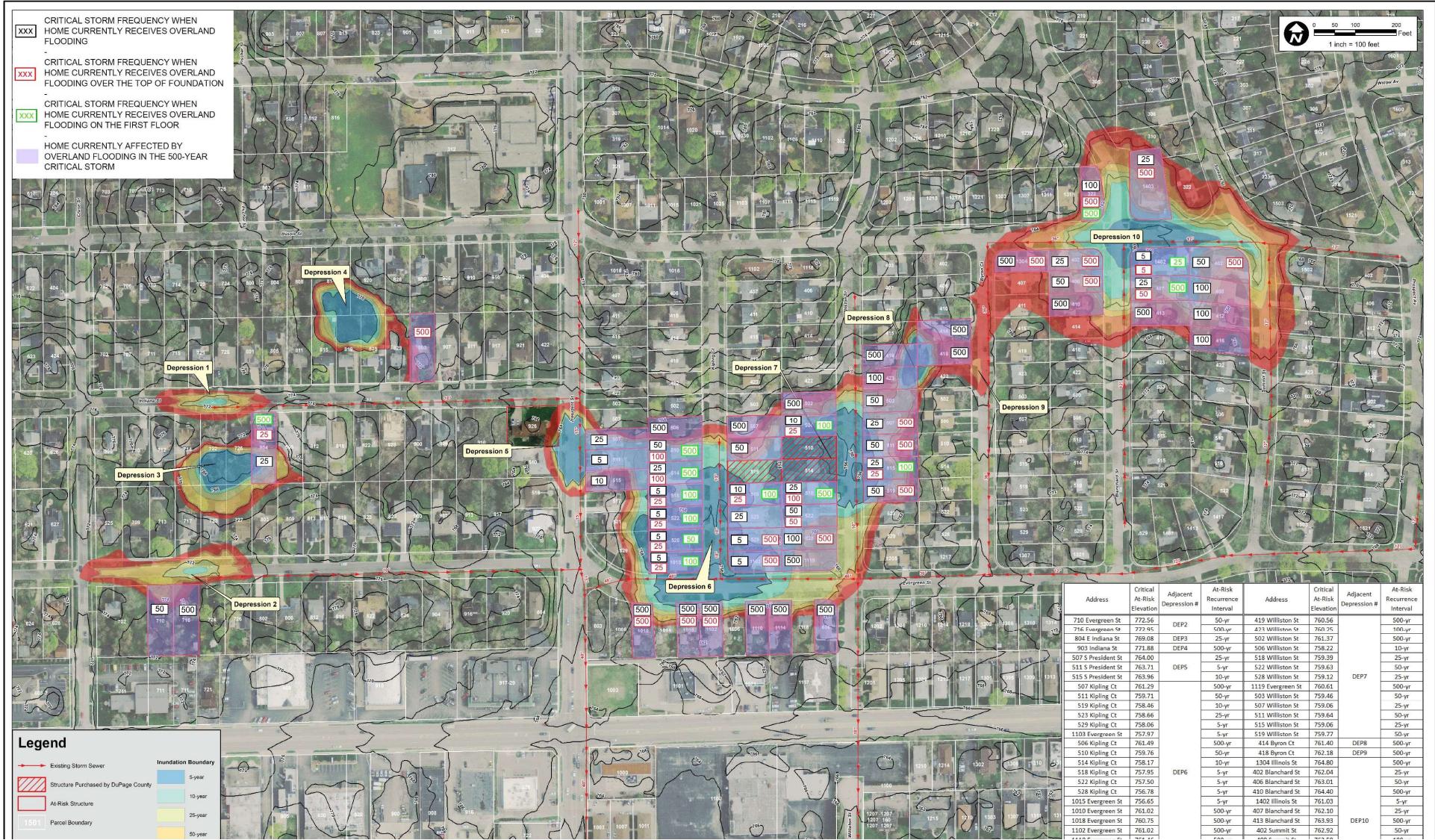
Stormwater Decision Solution Framework



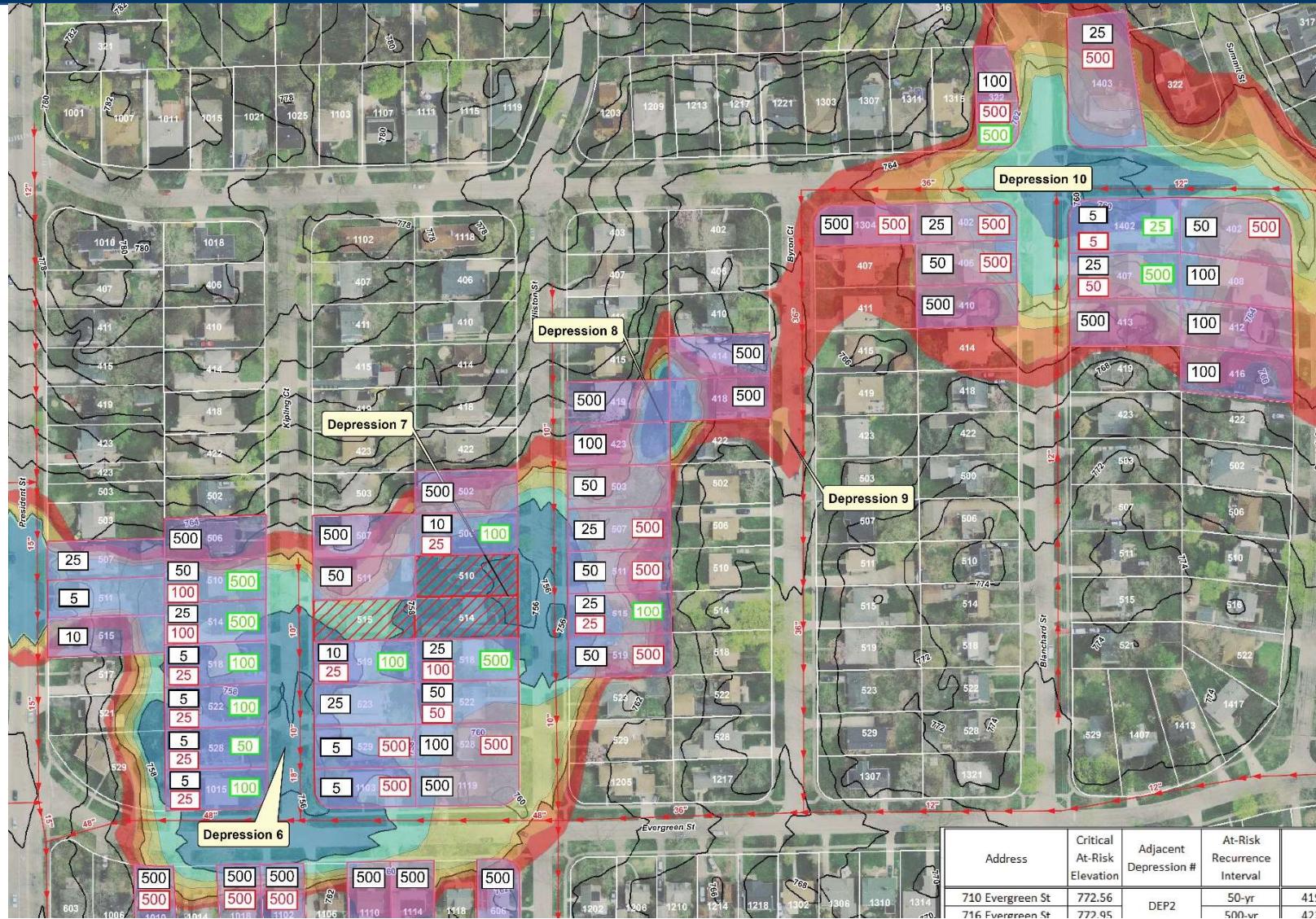




Willison Basin Flood Study



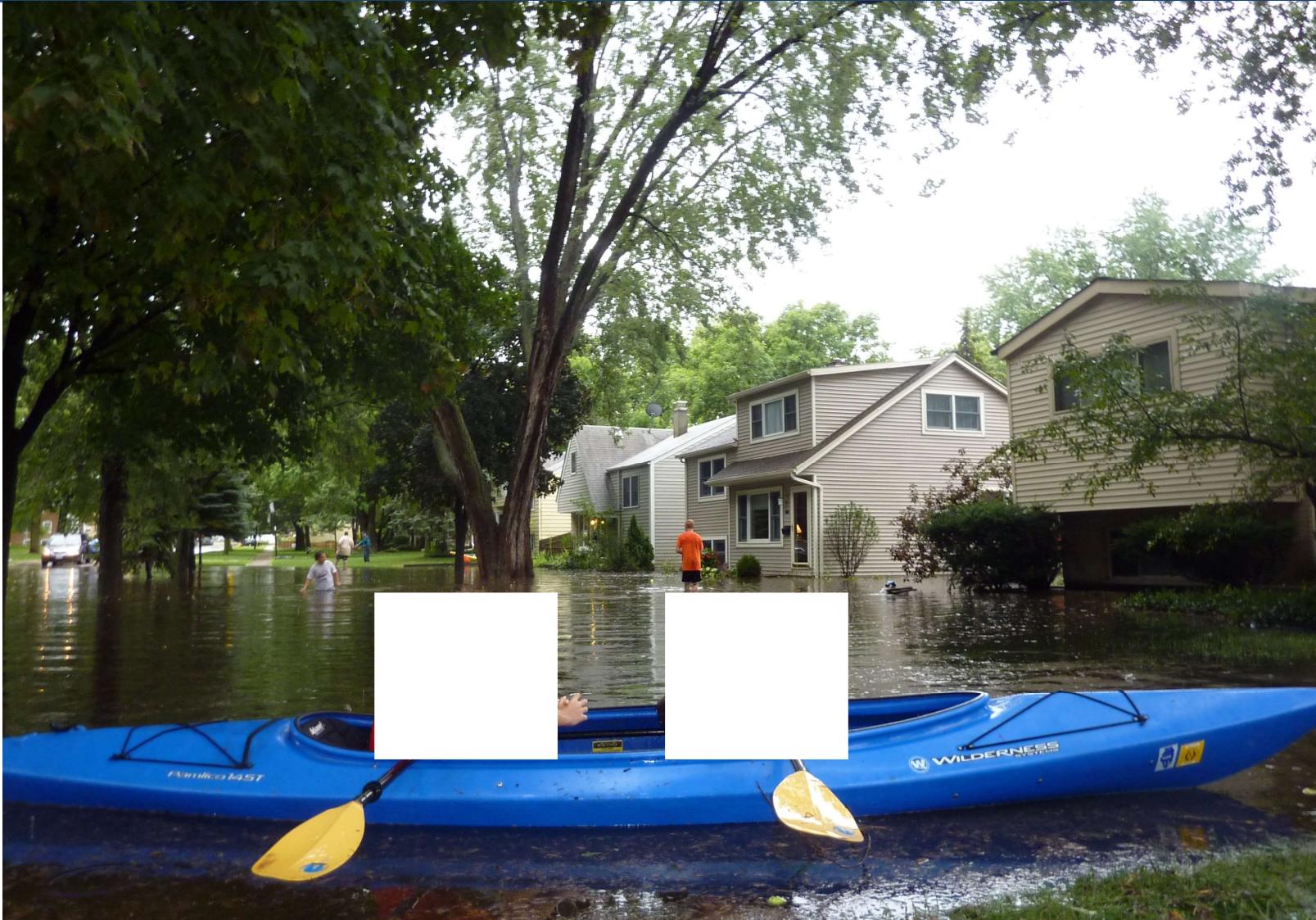
Willison Basin Flood Study



Willison Basin Flood Study

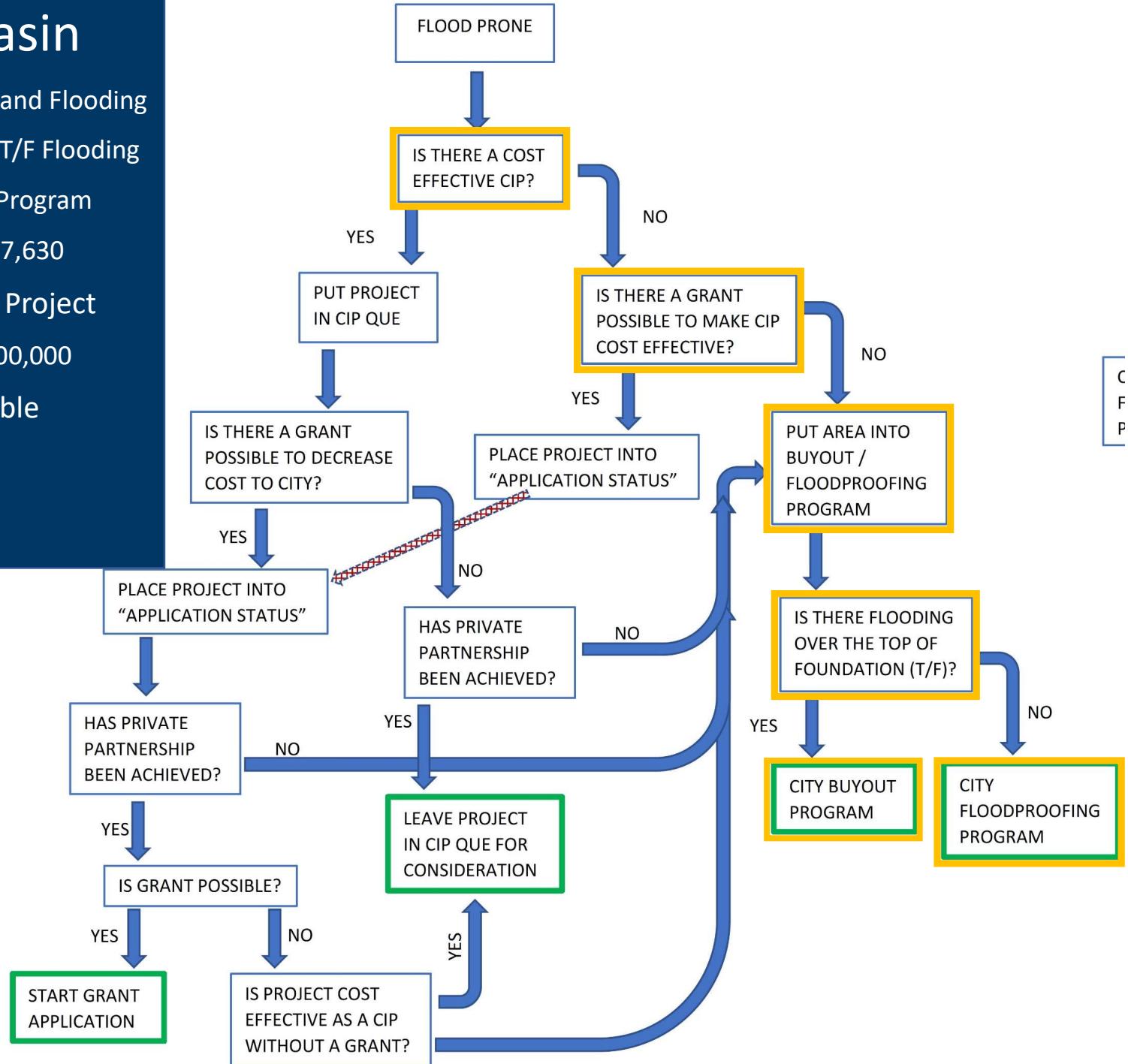


Willison Basin Flood Study



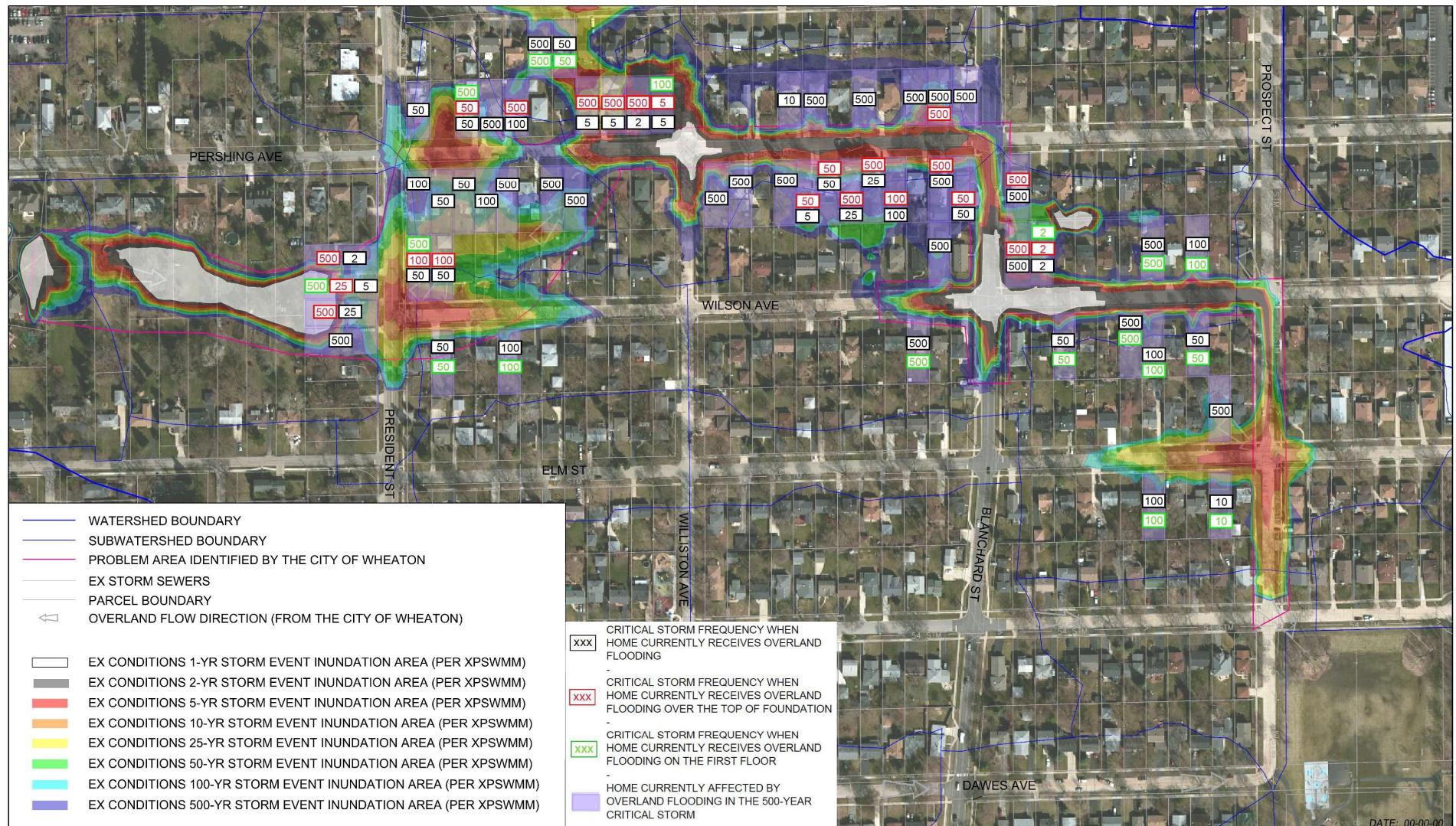
Willison Basin

- 36 Homes Receive Overland Flooding
- 14 Homes Receive Over T/F Flooding
- Buyout / Floodproofing Program
 - 100 YEAR = \$ 4,237,630
- Capital Improvement Project
 - 100 YEAR = \$10,000,000
 - No Grant Available

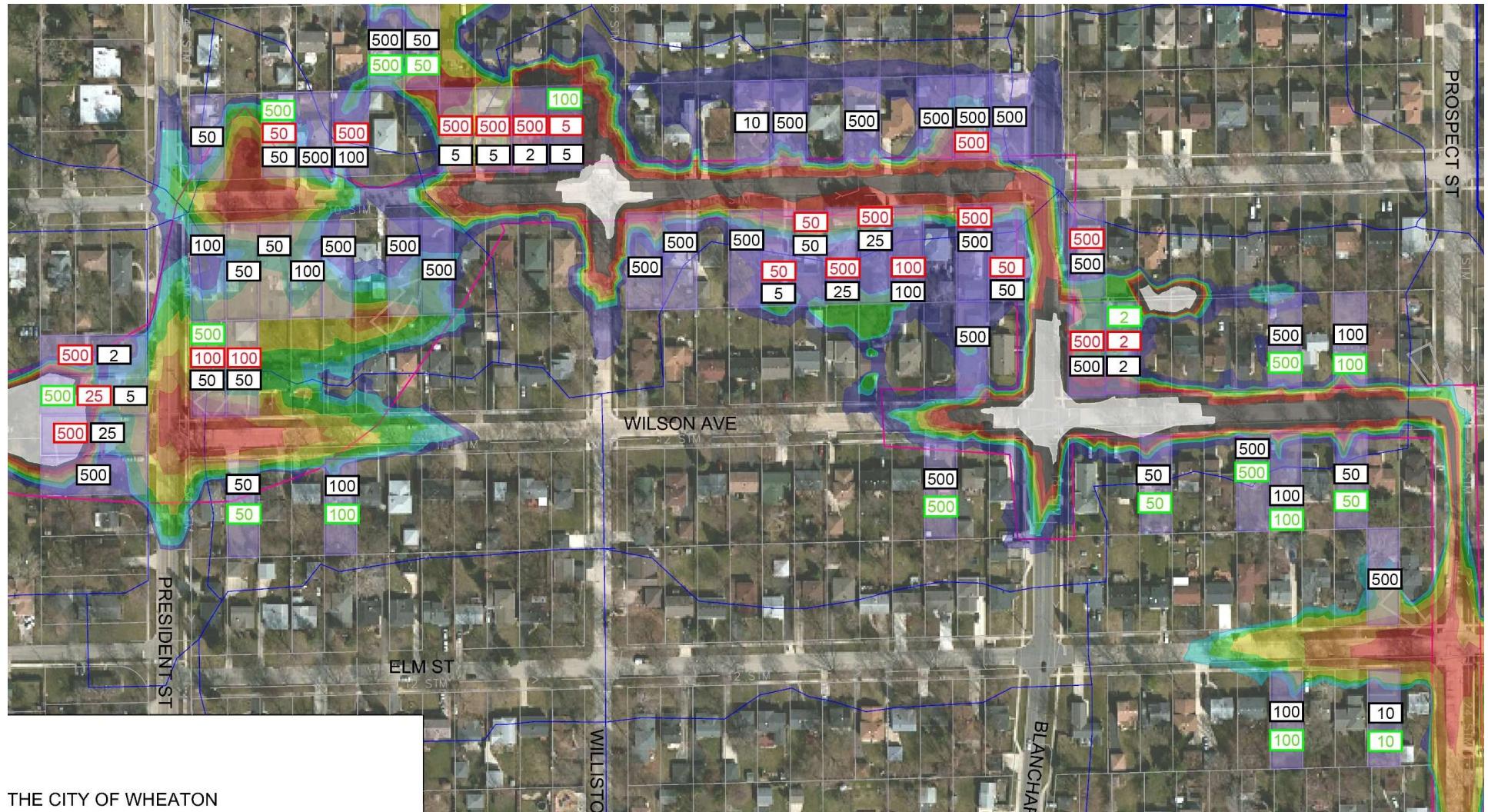


C
F
P

Pershing East Flood Study



Pershing East Flood Study



THE CITY OF WHEATON

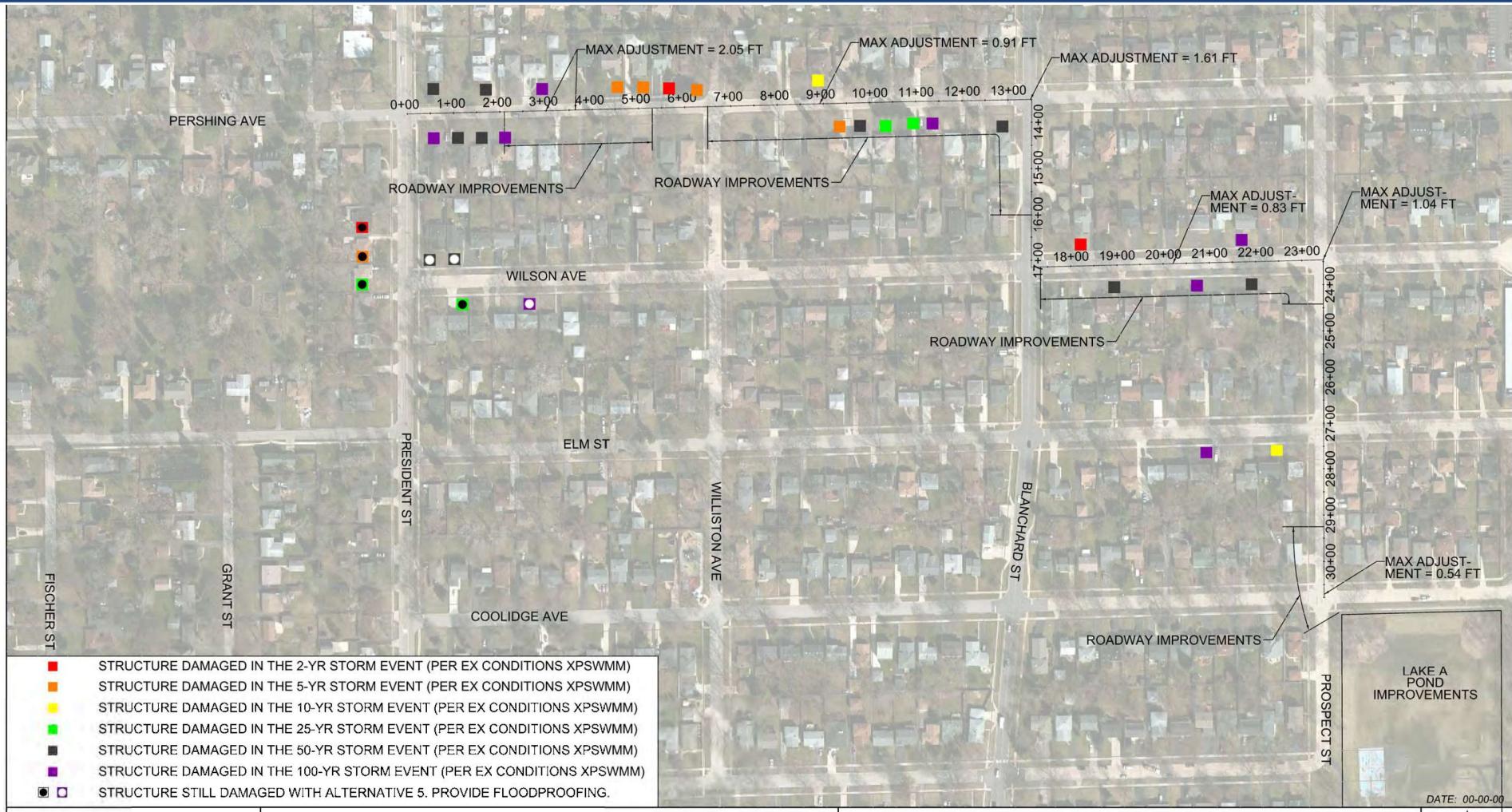
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Pershing East Flood Study

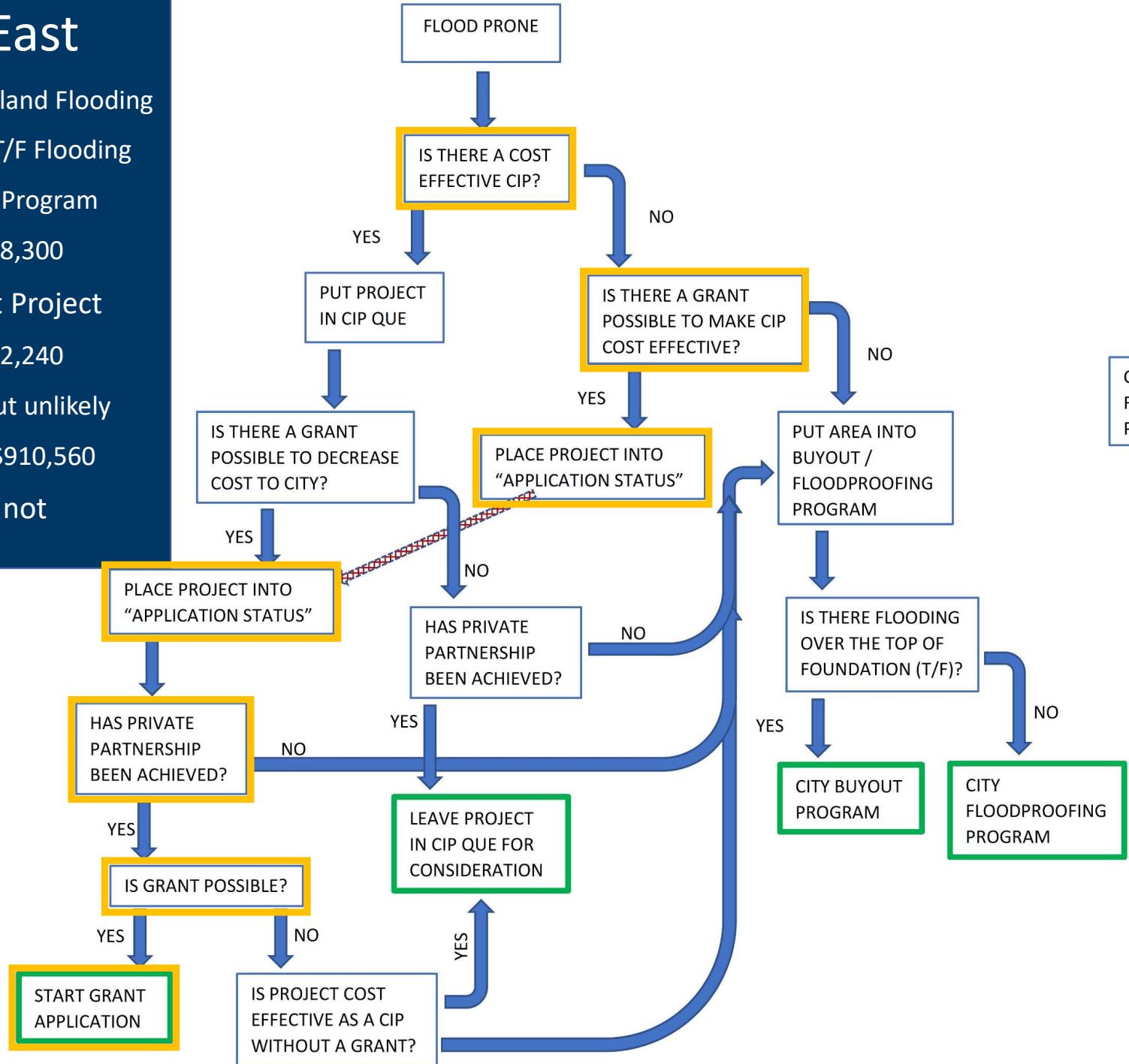


Pershing East Flood Study



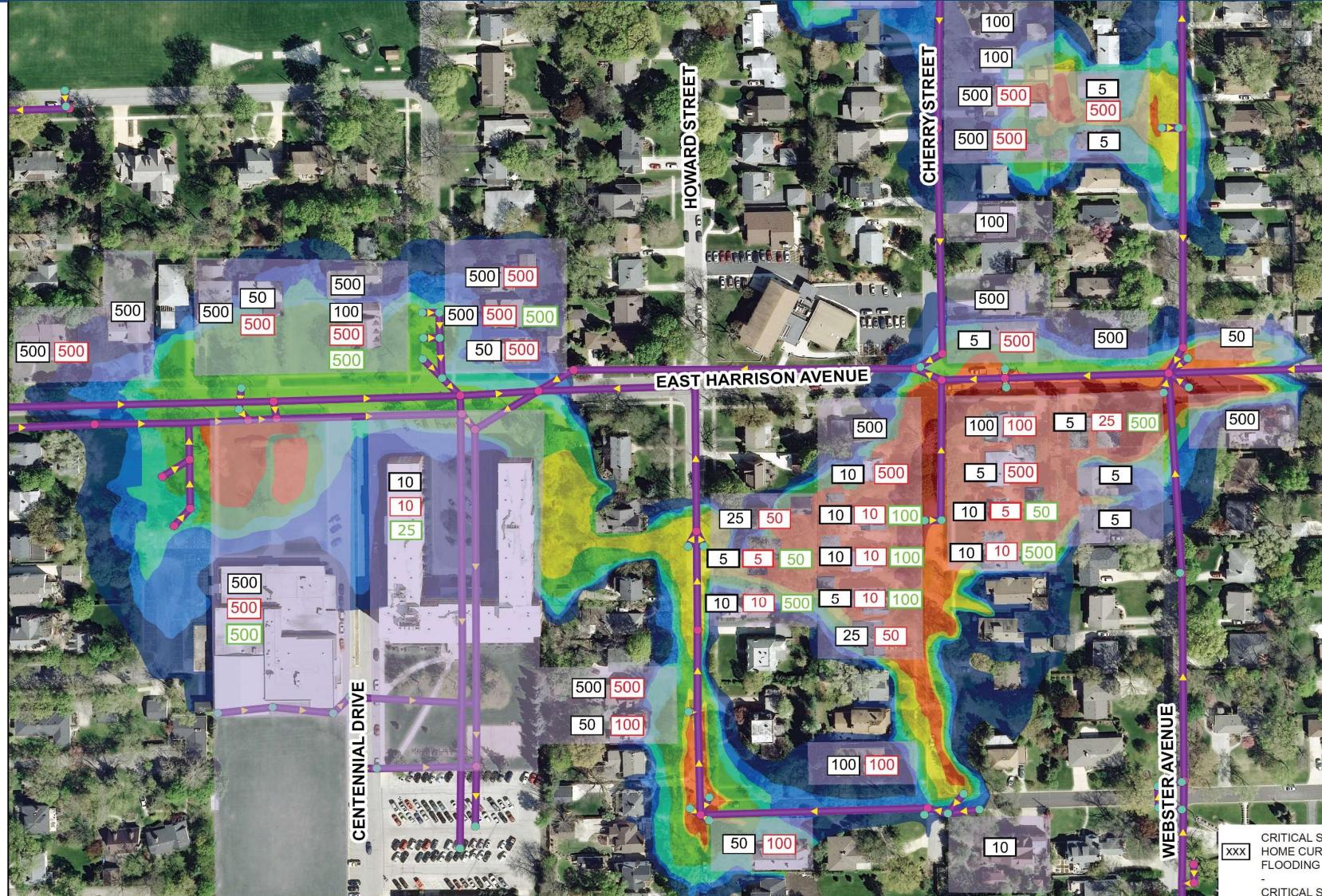
Pershing East

- 32 Homes Receive Overland Flooding
- 9 Homes Receive Over T/F Flooding
- Buyout / Floodproofing Program
 - 100 YEAR = \$3,158,300
- Capital Improvement Project
 - 100 YEAR = \$3,642,240
 - Grant Possible, but unlikely
 - CIP w/ GRANT = \$910,560
- Private Partnership not required



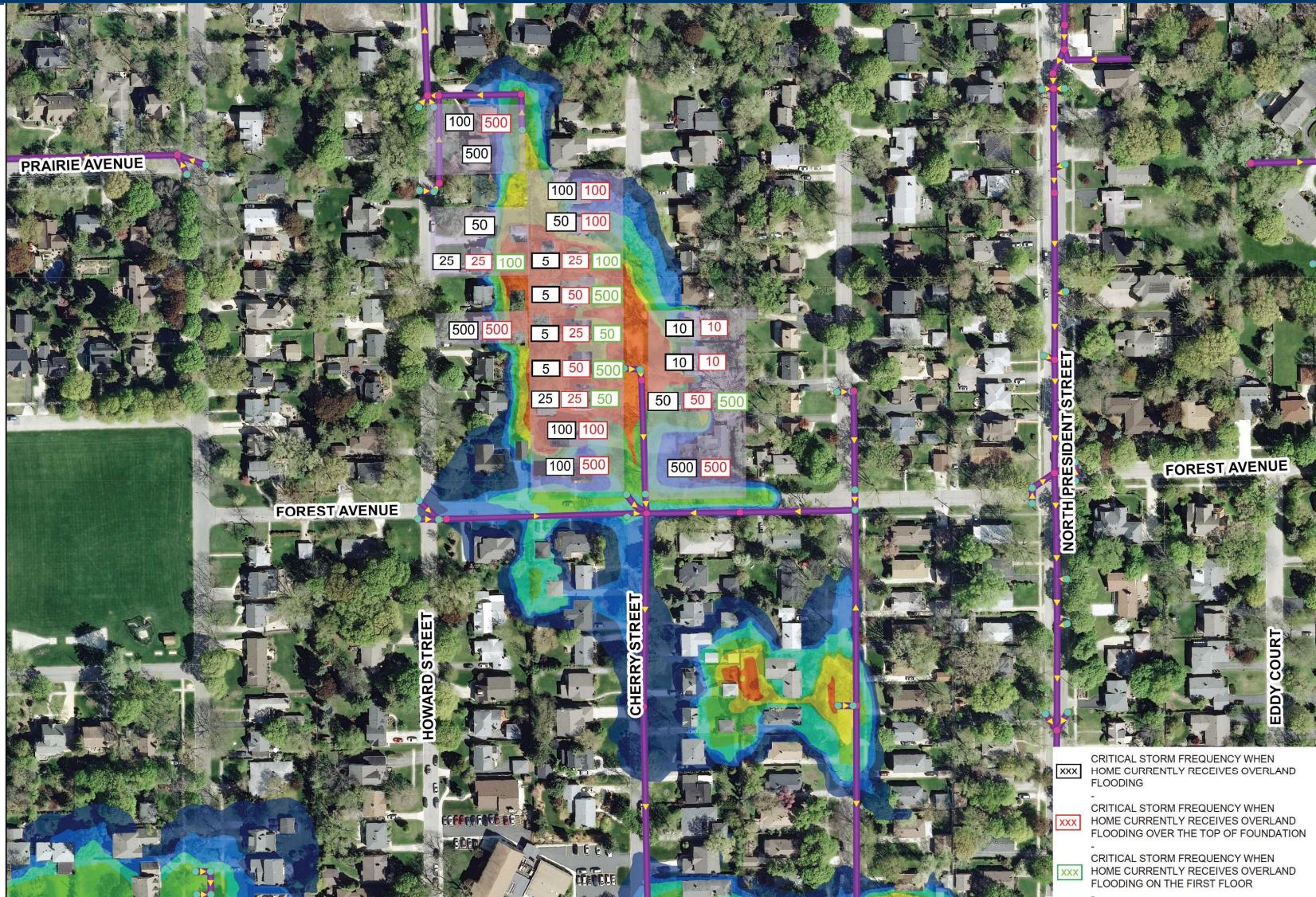
Harrison/Cherry Flood Studies

*Two areas were found to be hydraulically linked



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EXHIBIT 8
Proposed
Alternative 3
Wheaton, IL

Legend

- Proposed Storm Structure
 - Proposed Storm Sewer
 - Proposed Detention Areas

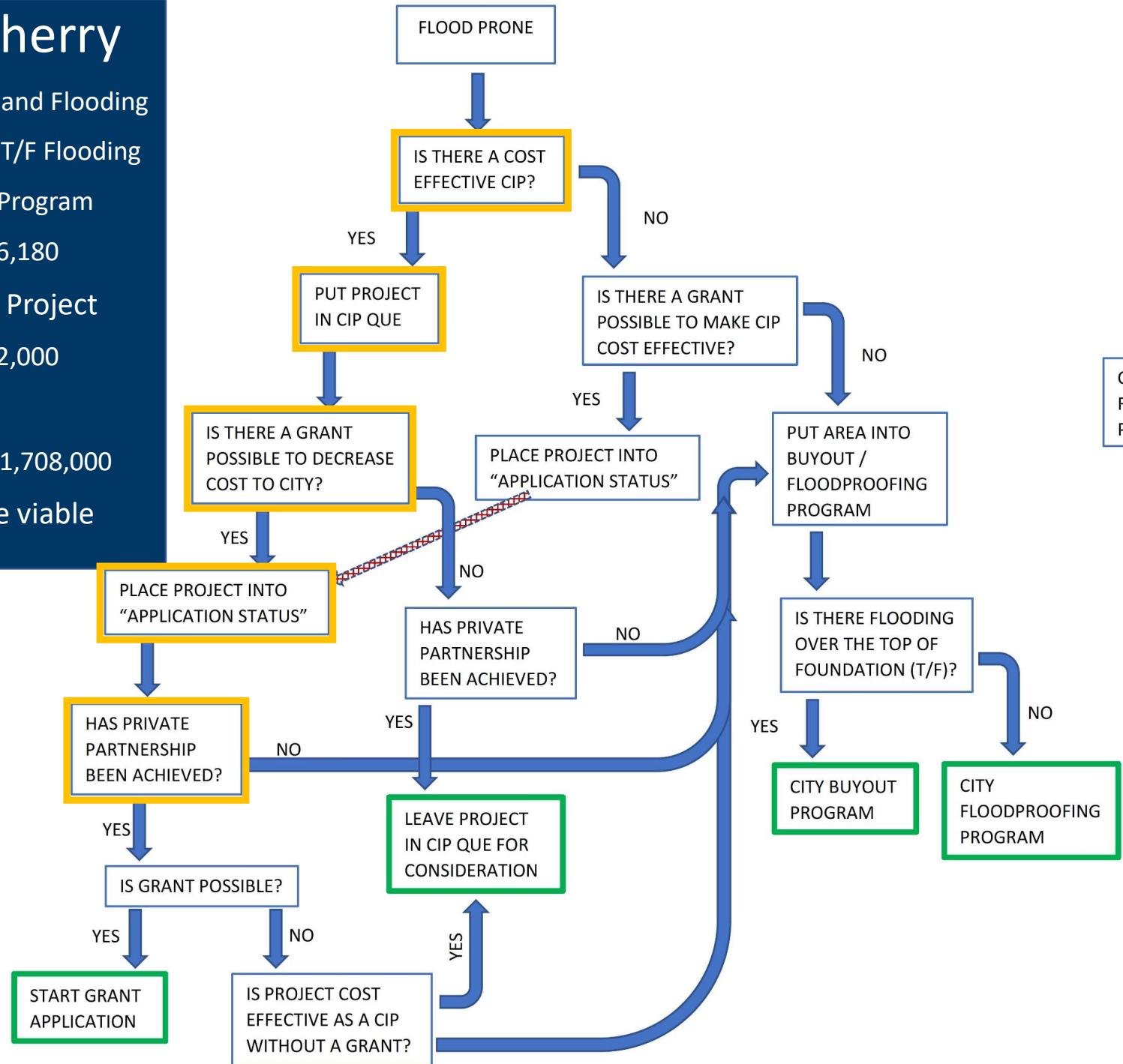


ENGINEERING
RESOURCE ASSOCIATES



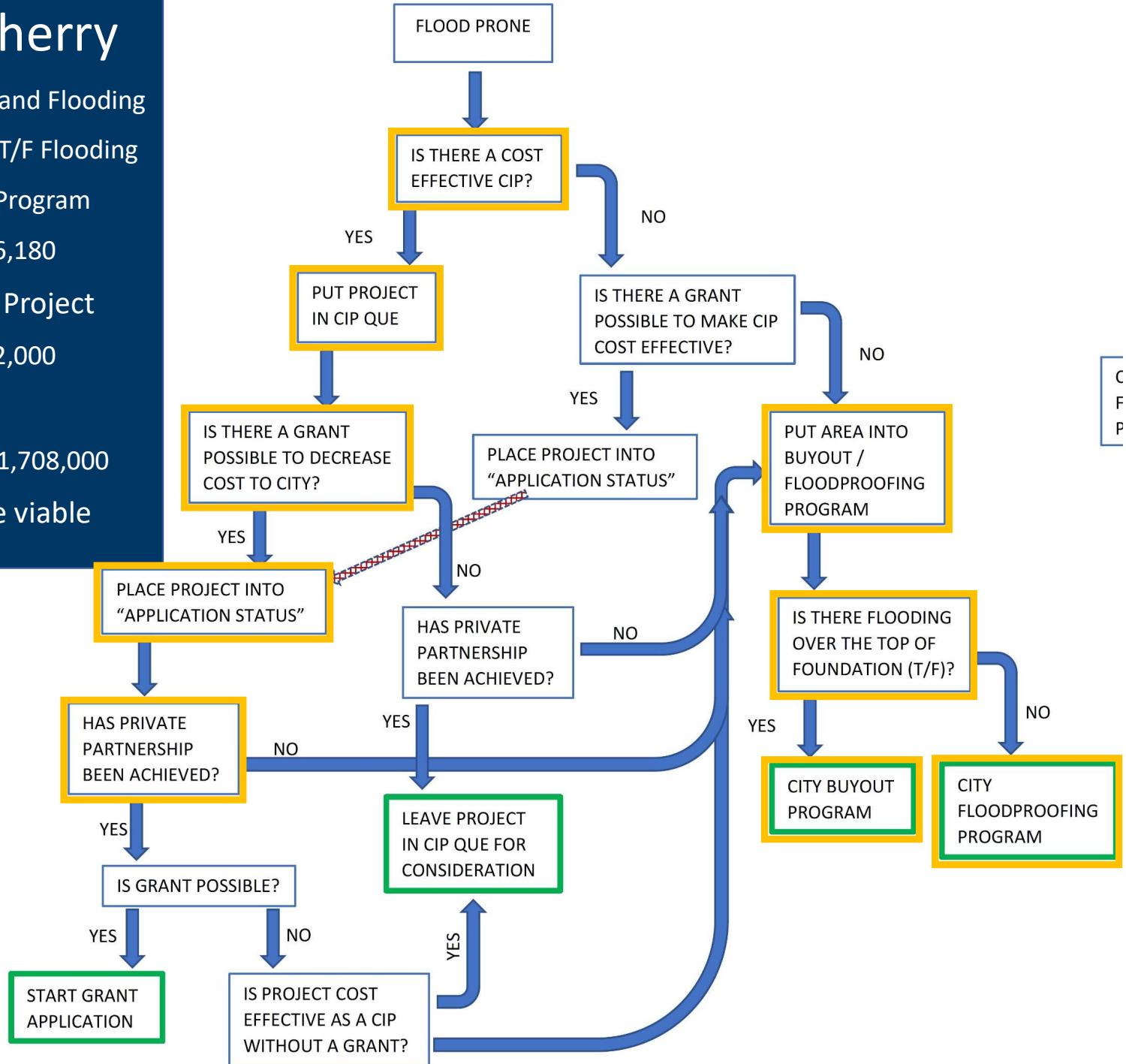
Harrison / Cherry

- 44 Homes Receive Overland Flooding
- 26 Homes Receive Over T/F Flooding
- Buyout / Floodproofing Program
 - 100 YEAR = \$9,456,180
- Capital Improvement Project
 - 100 YEAR = \$6,832,000
 - Grant Possible
 - CIP w/ GRANT = \$1,708,000
- Project might not be viable

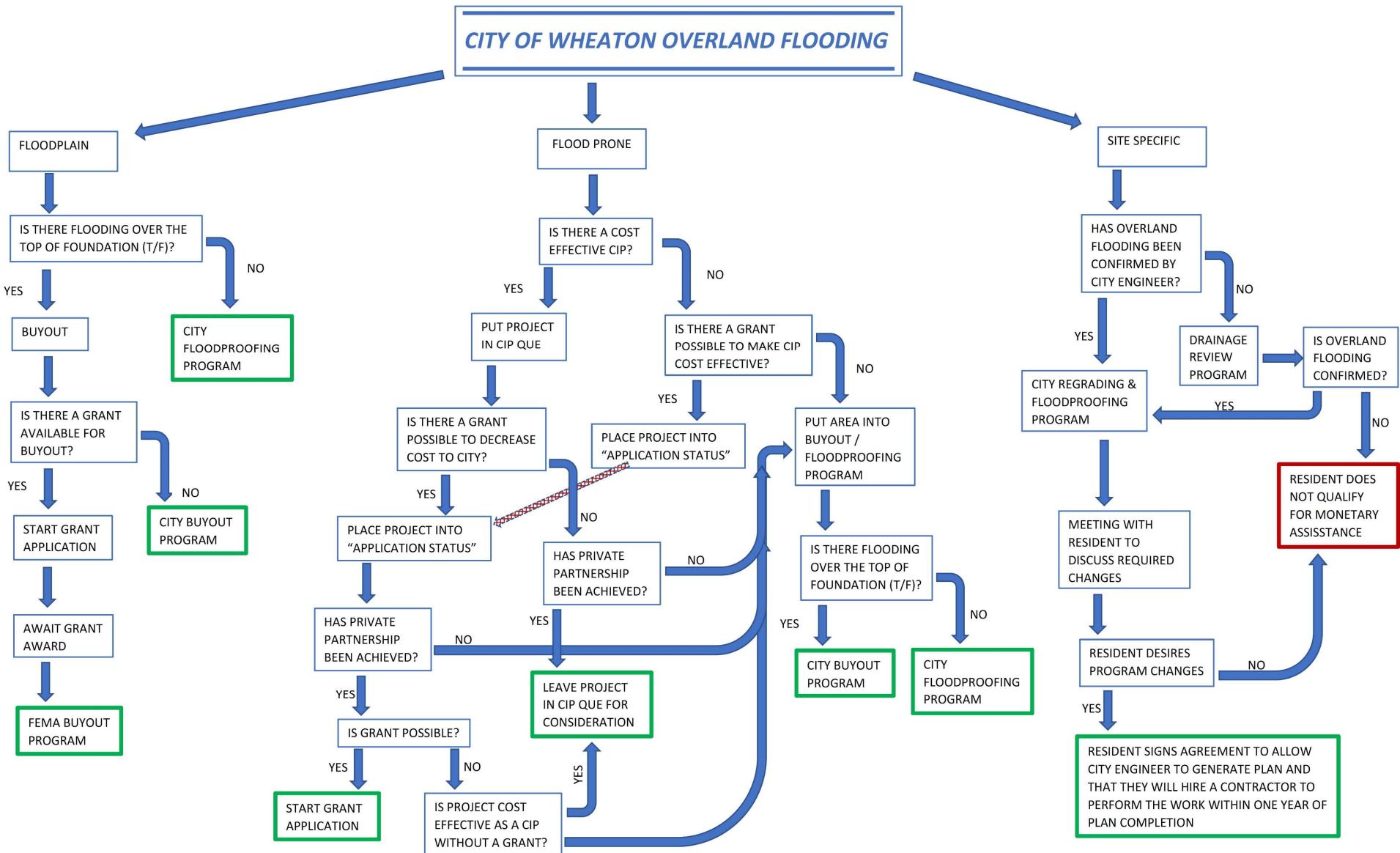


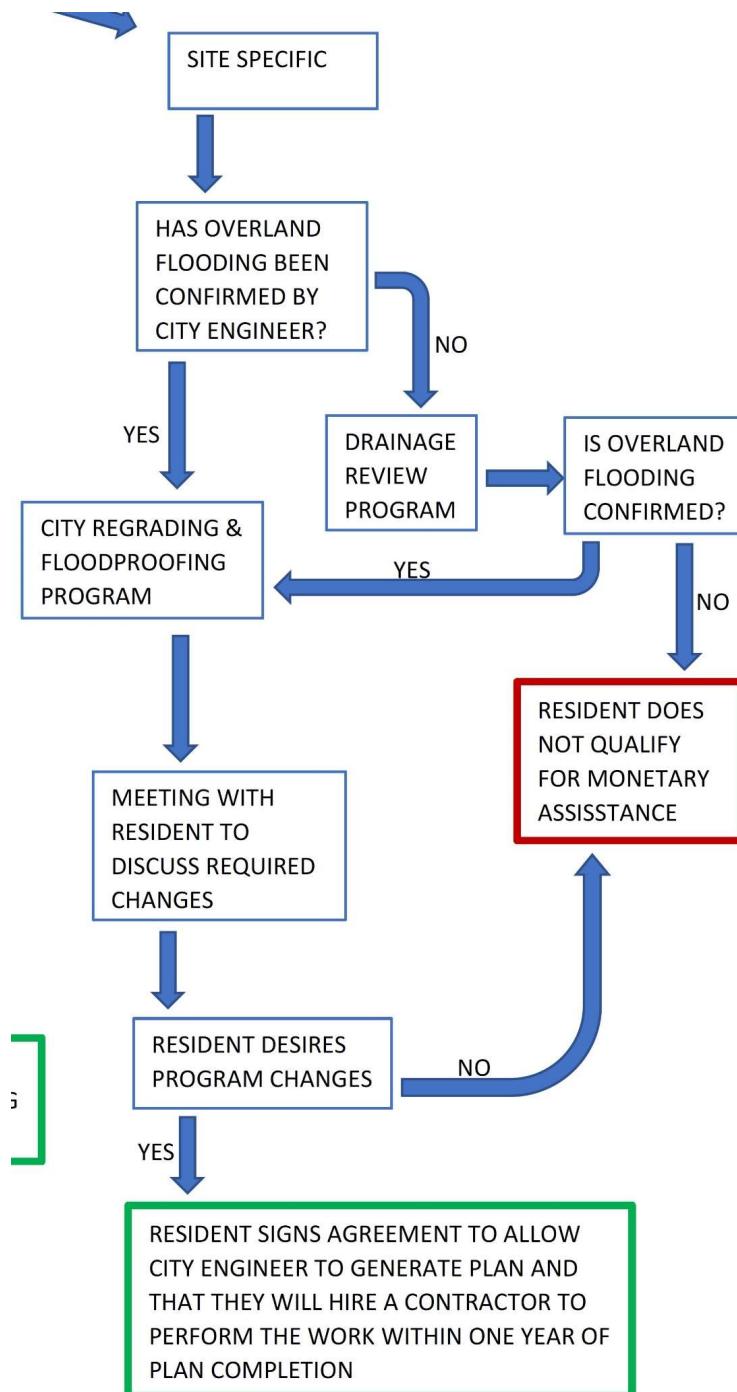
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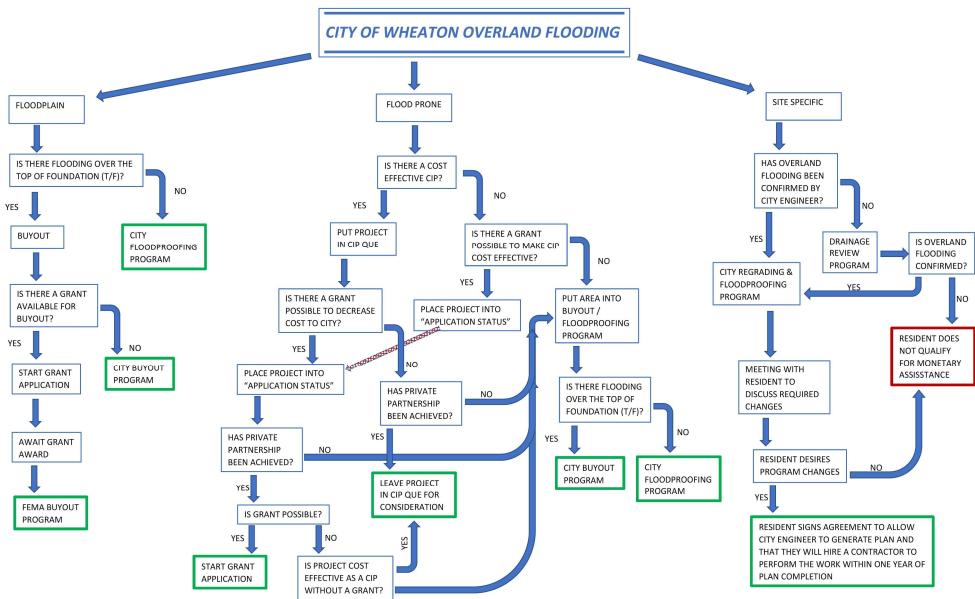


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Stormwater Decision Solution Framework



Cyclical Analysis Problem

- 1) Need decisions to figure out:
 - A) Total Cost of Program
 - B) Grant Possibility
 - C) Ability to Complete CIP
 - D) Storm Frequency of Program
 - 2) Which changes decisions made in #1

Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and
Not Top of Foundation Overland Flooding



Legend	FLOODPRONE OVERLAND FLOODING												Overland Total (100 Yr)	
	OVER TOP OF FOUNDATION / NOT OVER TOP OF FOUNDATION													
	2 Year		5 Year		10 Year		25 Year		50 Year		100 Year			
	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF		
Briarcliffe Lakes	0	0	0	0	4	8	18	13	23	16	29	13	42	
Cherry Street	0	0	0	6	2	6	6	4	9	4	12	7	19	
Dorset Drive	0	0	0	0	0	0	0	2	0	4	0	5	5	
Ridge Park	0	0	0	0	0	0	0	0	0	0	0	0	N/A	
Erie Street	1	0	1	0	1	3	3	4	7	4	7	6	13	
Glendale Avenue	0	0	0	0	0	0	2	1	2	1	2	1	3	
Harrison Avenue	0	0	2	6	7	7	8	8	10	11	14	11	25	
Jefferson Avenue	0	0	0	0	2	3	2	3	3	3	4	2	6	
Madison Avenue	0	0	0	0	0	0	0	0	0	0	0	0	N/A	
Mayo Avenue	0	0	0	0	0	0	0	4	0	5	1	10	11	
Pershing East	1	2	2	6	2	8	3	11	7	18	10	23	33	
Pershing West	0	0	1	1	1	1	1	1	1	5	2	4	6	
Delles - Prairie Path Park	0	0	0	0	0	0	0	0	2	1	5	1	6	
Thomas and Summit	0	0	0	0	1	2	1	2	2	3	5	3	8	
Turf, Countryside, & Ranch	0	0	1	0	2	0	2	0	3	5	7	7	14	
TCR Localized	0	0	0	0	0	9	0	10	0	11	0	12	12	
Wakeman & Cadillac	0	0	0	0	0	0	0	0	1	4	6	4	10	
Williston Basin	0	0	1	7	1	11	9	13	11	20	14	22	36	
SubTotal	2	2	8	26	23	58	55	76	81	115	118	131		
Total	4		34		81		131		196		249			

Legend	FLOODPLAIN OVERLAND FLOODING												Overland Total (100 Yr)	
	OVER TOP OF FOUNDATION / NOT OVER TOP OF FOUNDATION													
	2 Year		5 Year		10 Year		25 Year		50 Year		100 Year			
	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF		
FLOODPLAIN	0	0	0	0	2	2	7	5	24	17	35	34	69	

Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING														Overland Total (100 Yr)
BUYOUT / FLOODPROOFING PROGRAM COSTS	OVER TOP OF FOUNDATION / NOT OVER TOP OF FOUNDATION													Overland Total (100 Yr)
	2 Year		5 Year		10 Year		25 Year		50 Year		100 Year			
	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF
1	Briarcliffe Lakes	\$0	\$0	\$0	\$0	\$1,411,530	\$80,000	\$6,149,250	\$130,000	\$7,826,859	\$160,000	\$9,937,239	\$130,000	\$10,067,239
2	Cherry Street	\$0	\$0	\$0	\$60,000	\$444,540	\$60,000	\$1,551,120	\$40,000	\$2,526,315	\$40,000	\$3,825,390	\$70,000	\$3,895,390
3	Dorset Drive	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	\$0	\$40,000	\$0	\$50,000	\$50,000
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	N/A
5	Erie Street	\$256,605	\$0	\$256,605	\$0	\$256,605	\$30,000	\$726,735	\$40,000	\$1,608,615	\$40,000	\$1,608,615	\$60,000	\$1,668,615
6	Glendale Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$915,060	\$10,000	\$915,060	\$10,000	\$915,060	\$10,000	\$925,060
7	Harrison Avenue	\$0	\$0	\$727,710	\$60,000	\$2,868,465	\$70,000	\$3,154,860	\$80,000	\$3,831,480	\$110,000	\$5,450,790	\$110,000	\$5,560,790
8	Jefferson Avenue	\$0	\$0	\$0	\$0	\$1,395,270	\$30,000	\$1,395,270	\$30,000	\$1,782,075	\$30,000	\$2,194,860	\$20,000	\$2,214,860
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	N/A
10	Mayo Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$40,000	\$0	\$50,000	\$398,505	\$100,000	\$498,505
11	Pershing East	\$327,705	\$20,000	\$622,560	\$60,000	\$622,560	\$80,000	\$857,415	\$110,000	\$2,073,525	\$180,000	\$2,928,300	\$230,000	\$3,158,300
12	Pershing West	\$0	\$0	\$220,845	\$10,000	\$220,845	\$10,000	\$220,845	\$10,000	\$220,845	\$50,000	\$427,440	\$40,000	\$467,440
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,153,200	\$10,000	\$2,087,145	\$10,000	\$2,097,145
14	Thomas and Summit	\$0	\$0	\$0	\$0	\$280,545	\$20,000	\$280,545	\$20,000	\$542,790	\$30,000	\$2,025,735	\$30,000	\$2,055,735
15	Turf, Countryside, & Ranch	\$0	\$0	\$287,295	\$0	\$547,260	\$0	\$547,260	\$0	\$808,335	\$50,000	\$1,912,845	\$70,000	\$1,982,845
15	TCR Localized	\$0	\$0	\$0	\$0	\$0	\$90,000	\$0	\$100,000	\$0	\$110,000	\$0	\$120,000	\$120,000
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$248,505	\$40,000	\$1,763,010	\$40,000	\$1,803,010
17	Williston Basin	\$0	\$0	\$312,945	\$70,000	\$312,945	\$110,000	\$2,506,305	\$130,000	\$3,267,225	\$200,000	\$4,017,630	\$220,000	\$4,237,630
	SubTotal	\$584,310	\$20,000	\$2,427,960	\$260,000	\$8,360,565	\$580,000	\$18,304,665	\$760,000	\$26,804,829	\$1,150,000	\$39,492,564	\$1,310,000	
	Total	\$604,310		\$2,687,960		\$8,940,565		\$19,064,665		\$27,954,829		\$40,802,564		

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	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF
FLOODPLAIN	\$0	\$0	\$0	\$0	\$1,000,560	\$20,000	\$2,430,990	\$50,000	\$7,890,750	\$170,000	\$11,664,090	\$340,000	\$12,004,090	
Total	\$0		\$0		\$1,020,560		\$2,480,990		\$8,060,750		\$12,004,090			

Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING							
		CUMULATIVE BUYOUT / FLOODPROOFING COST					
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5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615
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11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564

Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING								
	CUMULATIVE BUYOUT / FLOODPROOFING COST							CIP COST
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year		
1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239	\$11,530,000
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845	\$1,267,558
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564	

Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and
Not Top of Foundation Overland Flooding



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	CUMULATIVE BUYOUT / FLOODPROOFING COST							CIP COST
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year		
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3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745
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15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000
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17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564	

Stormwater Decision Solution Framework

100 YEAR STORM PROGRAM COST



FLOODPLAIN

Buyout / Floodproofing

\$12,004,090

FLOOD PRONE AREAS

Buyout / Floodproofing / CIP

\$35,727,042

SITE SPECIFIC AREAS

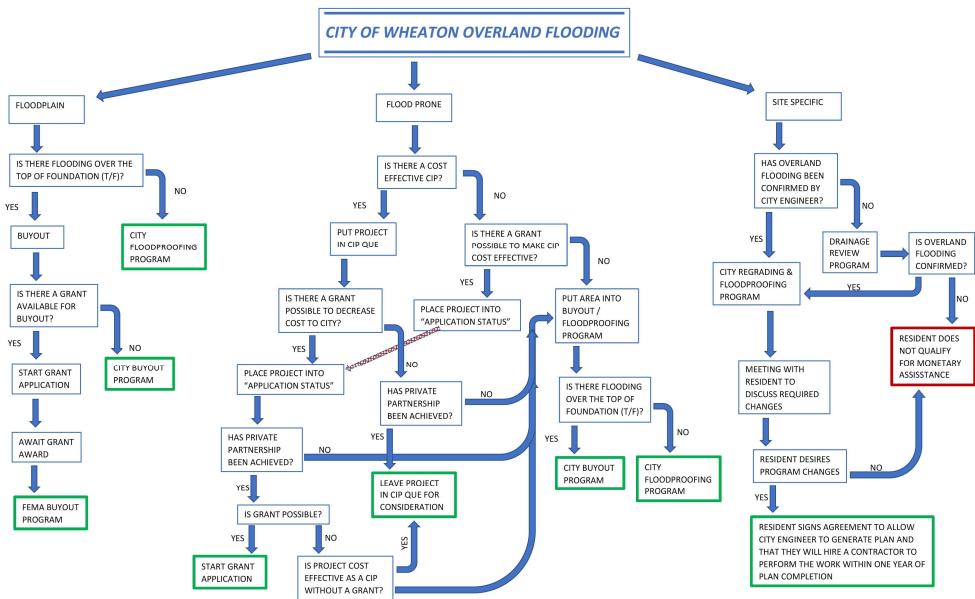
Floodproofing / Regrading

\$1,450,000

Total

\$49,181,132

Stormwater Decision Solution Framework



Cyclical Analysis Problem

- 1) Need decisions to figure out:
 - A) Total Cost of Program
 - B) **Grant Possibility**
 - C) Ability to Complete CIP
 - D) Storm Frequency of Program
 - 2) Which changes decisions made in #1

Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING									
Legend	CUMULATIVE BUYOUT / FLOODPROOFING COST							CIP COST	FEMA GRANT
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year			
1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239	\$11,530,000	
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)	
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400	93,600
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500	
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600	33,150
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180	\$6,832,000
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000	
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000	134,250
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240	910,560
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500	
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550	
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745	\$4,690,852
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845	\$1,267,558	316,890
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000	
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094	
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000	
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		

Stormwater Decision Solution Framework

100 YEAR STORM PROGRAM COST



FLOODPLAIN

Buyout / Floodproofing

\$12,004,090

FLOOD PRONE AREAS

Buyout / Floodproofing / CIP

\$35,727,042

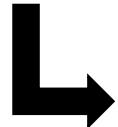
SITE SPECIFIC AREAS

Floodproofing / Regrading

\$1,450,000

Total

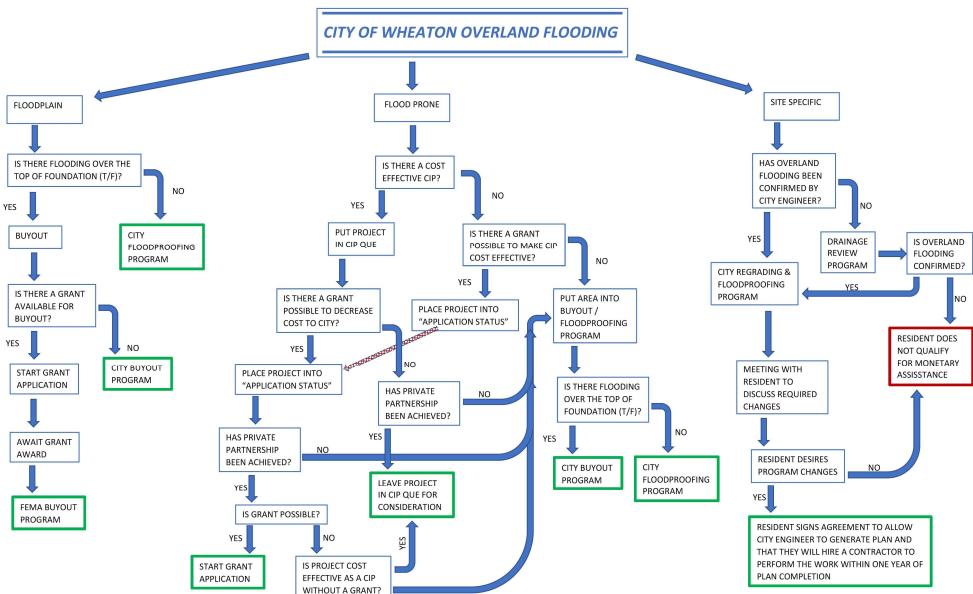
\$49,181,132



Total with Grants

\$37,005,102

Stormwater Decision Solution Framework



Cyclical Analysis Problem

- 1) Need decisions to figure out:
 - A) Total Cost of Program
 - B) Grant Possibility
 - C) Ability to Complete CIP
 - D) Storm Frequency of Program
- 2) Which changes decisions made in #1

Stormwater Decision Solution Framework

ABILITY TO COMPLETE CIP



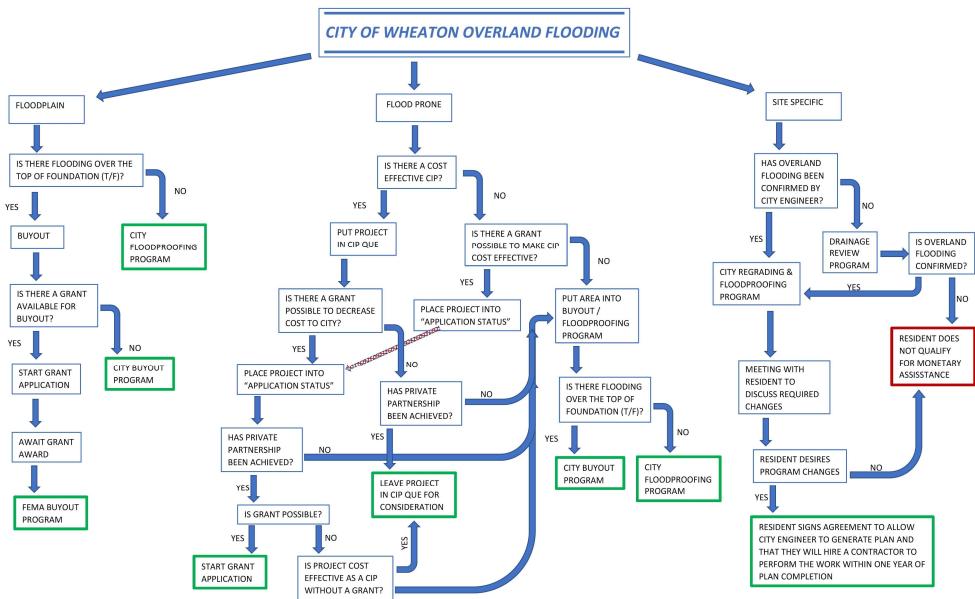
NOT COMPLETED YET



Adds in some variability
in final estimates
IF CIP CANNOT BE DONE:
100 Year +5 Million
50 Year +800k
25 Year +800k

Requires Resident Meetings

Stormwater Decision Solution Framework



Cyclical Analysis Problem

- 1) Need decisions to figure out:
 - A) Total Cost of Program
 - B) Grant Possibility
 - C) Ability to Complete CIP
 - D) **Storm Frequency of Program**
 - 2) Which changes decisions made in #1

Stormwater Decision Solution Framework

STORM FREQUENCY



TOTAL PROGRAM COST ESTIMATE

(Floodplain, Flood Prone, & Site Specific Combined)

	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Total without Grants	\$2,054,310	\$4,137,960	\$11,411,125	\$22,203,195	\$36,663,469	\$49,181,132
Total with Grants	\$2,054,310	\$4,137,960	\$7,774,600	\$19,256,007	\$26,930,851	\$37,005,102

Stormwater Decision Solution Framework

100 YEAR STORM FREQUENCY



FLOODPRONE OVERLAND FLOODING									
Legend	CUMULATIVE BUYOUT / FLOODPROOFING COST							CIP COST	FEMA GRANT
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year			
1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239	\$11,530,000	
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)	
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400	93,600
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500	
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600	33,150
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180	\$6,832,000
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000	
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000	134,250
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240	910,560
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500	
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550	
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745	\$4,690,852
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845	\$1,267,558	316,890
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000	
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094	
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000	
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		

Stormwater Decision Solution Framework

25 YEAR STORM FREQUENCY



FLOODPRONE OVERLAND FLOODING									
Legend	CUMULATIVE BUYOUT / FLOODPROOFING COST							CIP COST	FEMA GRANT
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year			
1 Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239		\$11,530,000	
2 Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)		
3 Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000		\$374,400	93,600
4 Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0		\$0	
5 Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615		\$1,897,500	
6 Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060		\$132,600	33,150
7 Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180	\$6,832,000	1,708,000
8 Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860		\$2,600,000	
9 Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0		\$0	
10 Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505		\$537,000	134,250
11 Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300		\$3,642,240	910,560
12 Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440		\$2,827,500	
13 Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145		\$1,153,550	
14 Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745	\$4,690,852	
15 Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845		\$1,267,558	316,890
15 TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000		\$120,000	
16 Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010		\$2,235,094	
17 Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630		\$10,000,000	
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		

Stormwater Decision Solution Framework

STORM FREQUENCY



TOTAL PROGRAM COST ESTIMATE

(Floodplain, Flood Prone, & Site Specific Combined)

	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
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Total with Grants	\$2,054,310	\$4,137,960	\$7,774,600	\$19,256,007	\$26,930,851	\$37,005,102

CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

Next Steps

- 1) The Storm Frequency of the Flood Protection Program
- 2) Evaluation of Ancillary Benefits of CIP Projects

CIP PROJECTS : MOVE WATER AWAY FROM STRUCTURES

DON'T LEAVE STRUCTURES IN THE INUNDATION AREAS

MAKE STREETS MORE PASSABLE DURING FLOODS

DON'T ELIMINATE NEIGHBORHOODS & TAX BASE

NONE OF THESE
BENEFITS ARE TAKEN
INTO ACCOUNT AS OF YET

- 3) Evaluation of how City will fund Flood Protection Program



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

Recommendations

1) The Storm Frequency of the Flood Protection Program

- CONTINUE EVALUATION OF BASED ON PREVIOUS CITY COUNCIL DIRECTION
OF 100 YEAR STORM LEVEL



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

Recommendations

2) Evaluation of Ancillary Benefits of CIP Projects

- STAFF PREPARES A PRESENTATION TO DEPICT EACH FLOOD PRONE AREA AS A BUYOUT/FLOODPROOFING SOLUTION vs. CIP PROJECT SOLUTION
- PURPOSE WOULD BE FOR COUNCIL TO SEE THE SPECIFIC RESULTS OF BOTH SOLUTIONS AND THEN BE ABLE TO DETERMINE WHETHER THE ANCILLARY BENEFITS OF CIP PROJECTS OUTWEIGH ANY ADDITIONAL CIP COSTS.



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

Recommendations

3) Evaluation of how City will fund Flood Protection Program

- PRESENTATION ON FUNDING MECHANISMS



CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

Flood Protection Program Discussion Part 4

Joseph Tebrugge – Director of Engineering

Kris Dunn – Project Engineer Stormwater

Department of Engineering

February 22, 2021

THANK YOU
ANY QUESTIONS?

