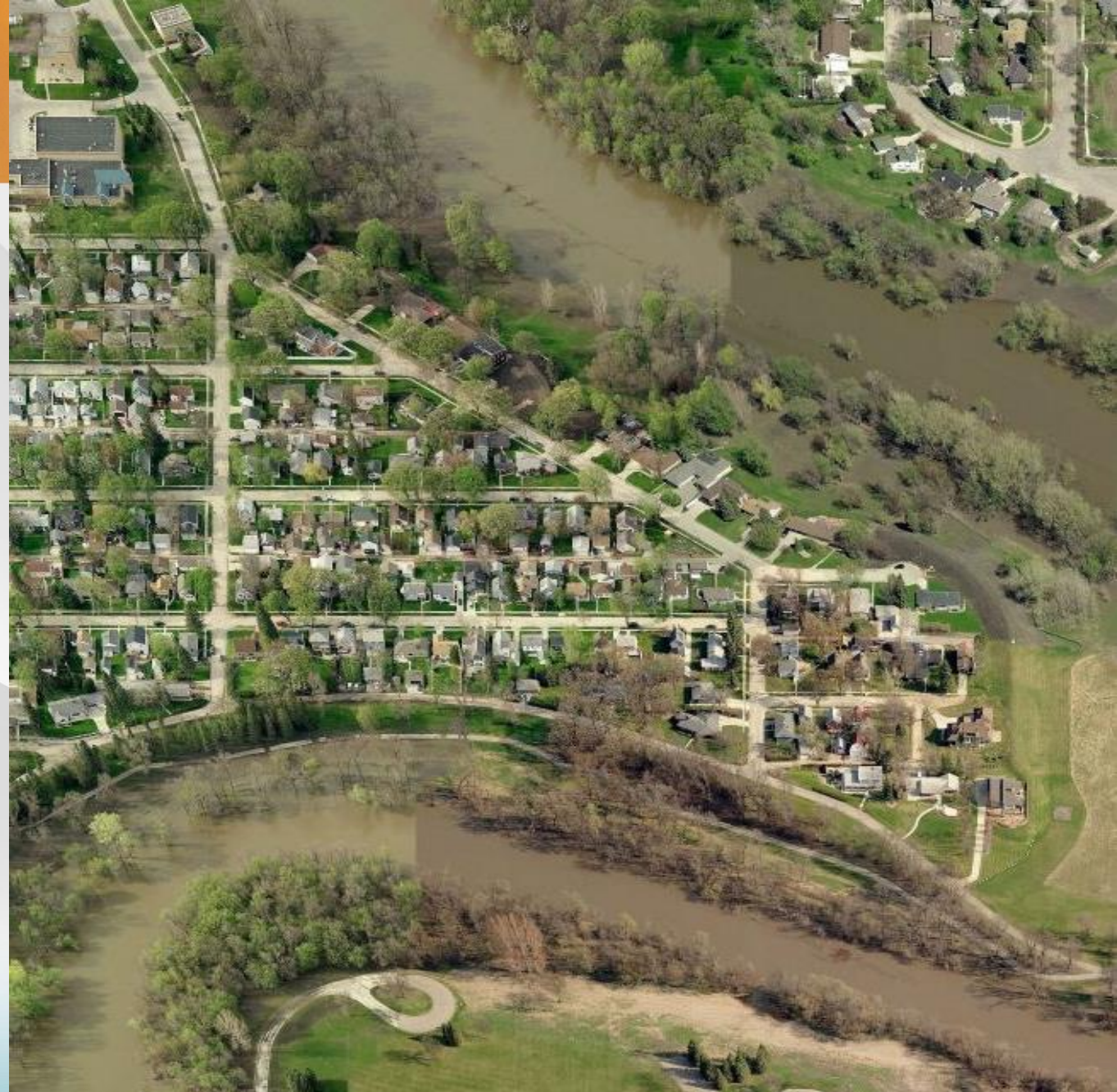
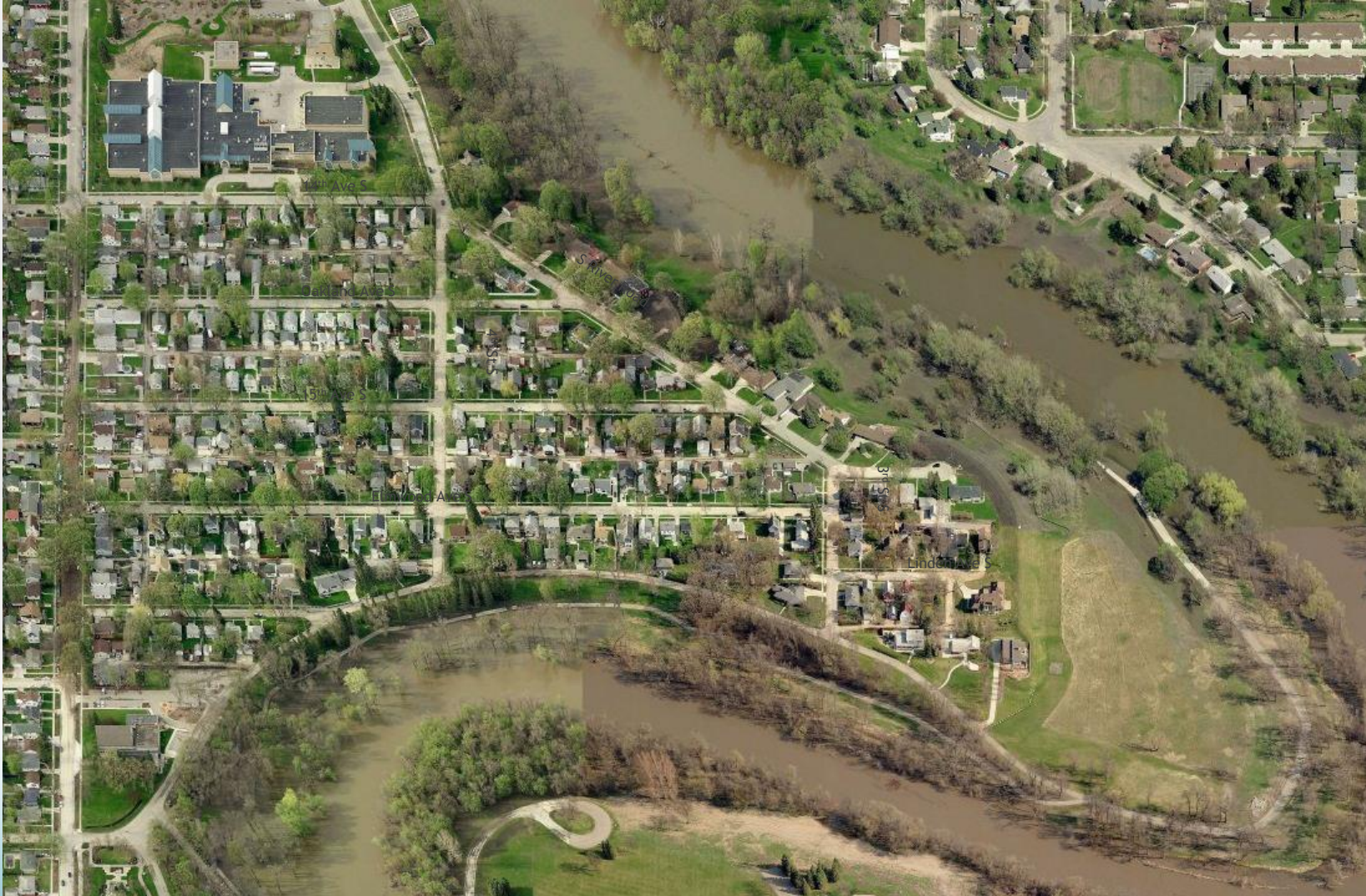


# Belmont Park Area (South River Road & 3rd Street South)





# Project Location - Belmont Park Area Flood Mitigation



## Belmont Flood Mitigation Project - Phase 2

7 Additional  
Homes need to  
be purchased  
and demolitions  
completed in  
2017

## Belmont Flood Mitigation Project - Phase 3

Water Treatment  
Plant Red River  
Intake Structure  
Protection (500  
yr Protection)



# Alignment Options

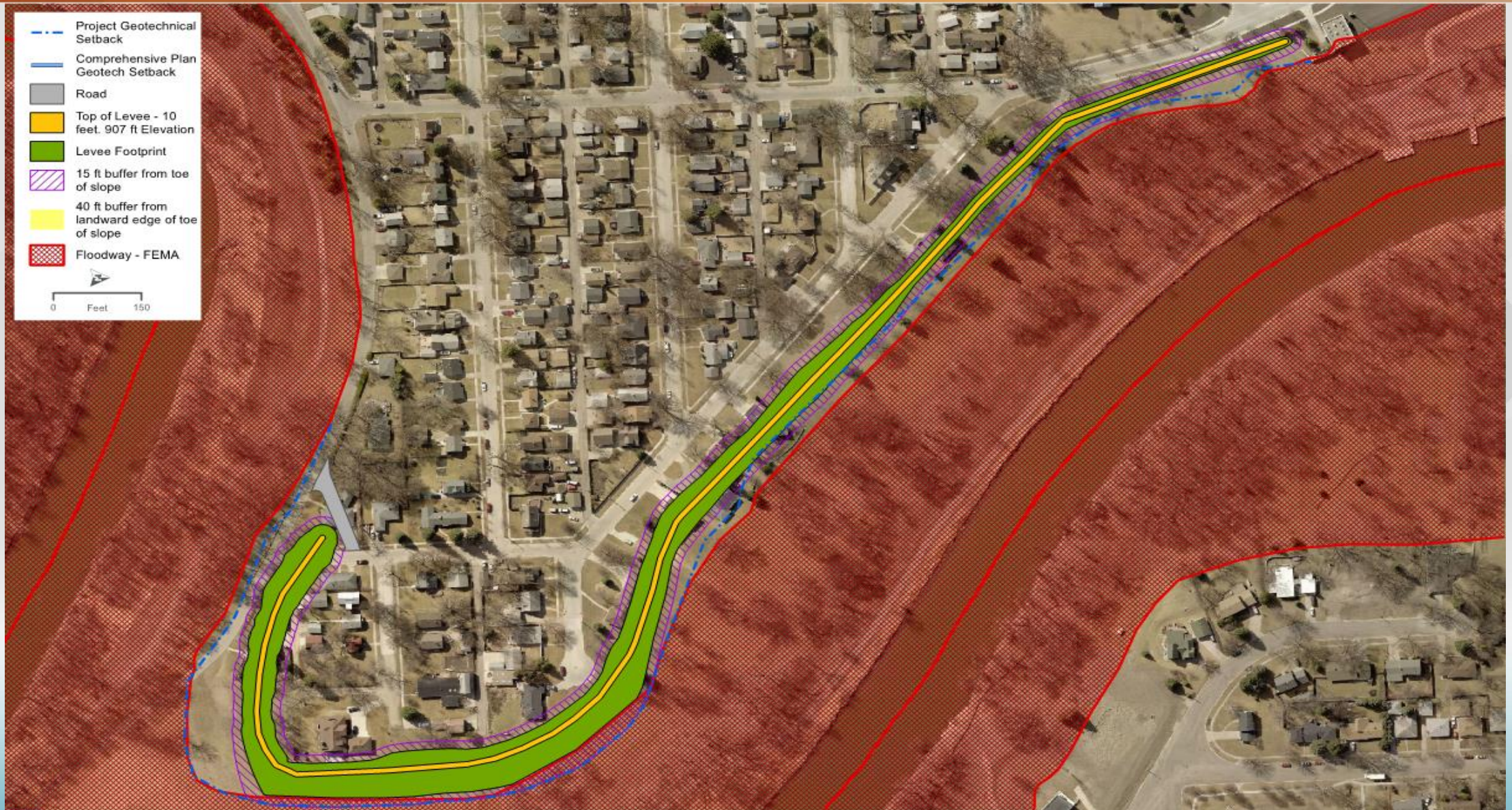








# Alignment Options





# Alignment Option - Recommended

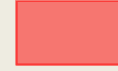




# Questionnaire Responses



= Support proposed plan



= Do not support proposed plan





# Additional Evaluation - 1458 South River Road



Minimal Disturbance Zone Setback (MDZS) and Floodway nearly coincidental location, about 26 feet from structure. The existing structure is within the Limited Disturbance Zone Setback (LDZS).

Anticipated floodwall footing width is 32 feet, 24 feet on river side and 8 feet on protected side. Edge of floodwall footing would be only 16 feet horizontally from foundation wall at a depth of 13 feet. Due to the close proximity, the use of metal sheet piling installation and removal would have a significant risk of damaging the structure.



# 1458 South River Road

Floodwall Height*	Length	Cost per lineal ft	Cost per Segment
(ft)	(ft)	(\$/ft)	(\$)
9	77	\$2,600	\$200,200
13	70	\$3,500	\$245,000
17	131	\$5,000	\$655,000

\*Height is top of footing to top of wall.

The costs are based on typical floodwall costs for the Fargo area. The total cost for the floodwall results in a cost of \$1,100,200.



# Additional Estimated Costs

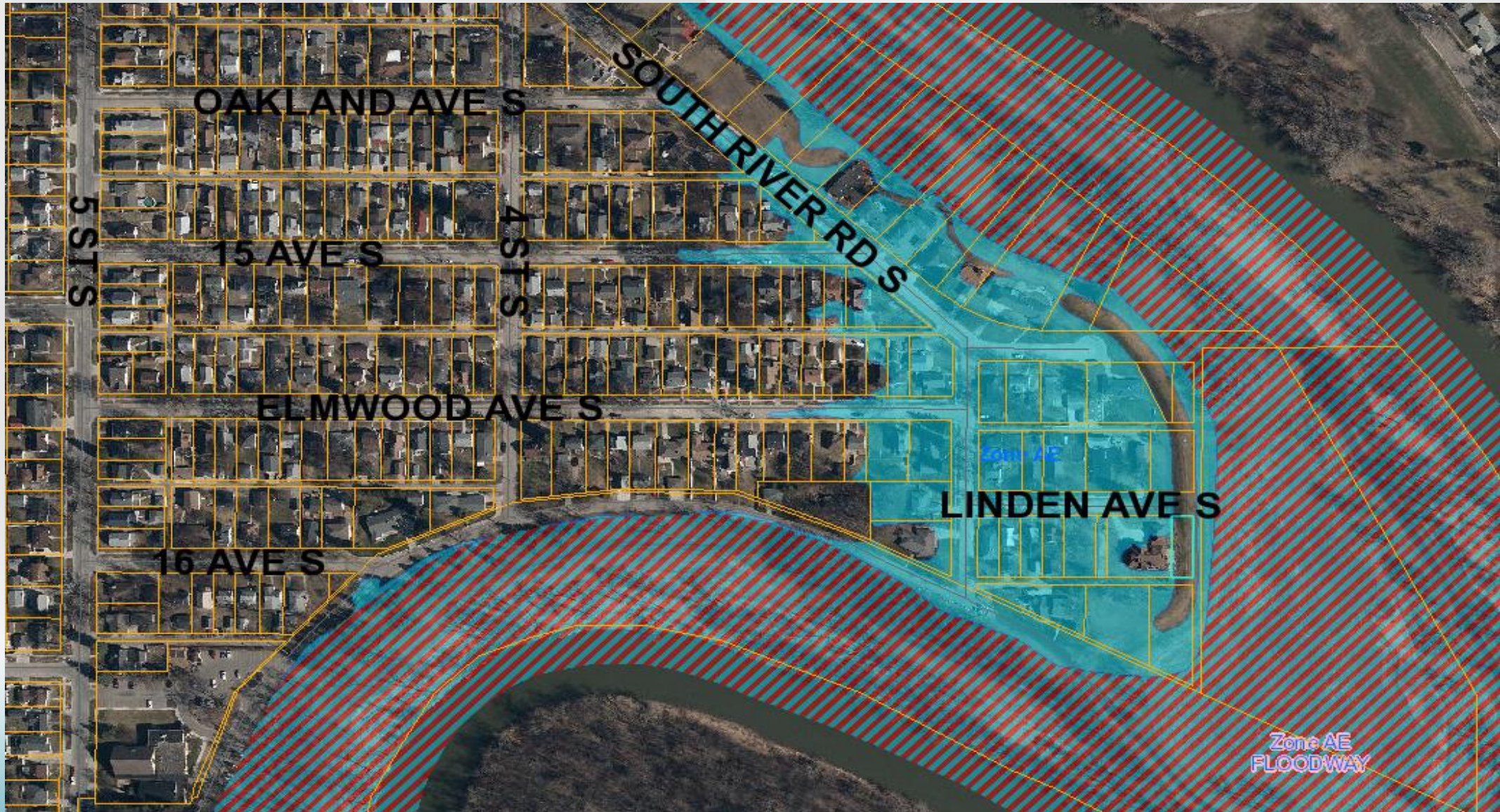
Additional Costs	Amount	Rate	Total
Demolition of retaining wall	100 ft	Lump sum	\$30,000
Clearing and grubbing	200 ft*200 ft = 4444 sq yd	Lump sum	\$15,000
Excavation	10 ft deep, 30 ft BW, 2:1 side slope, 278 ft long = 5148 cy	\$9/cy	\$46,332
Evaluation of structure and foundation of Stern's house to inform construction impacts	150 hrs	\$180/hr	\$27,000
100 lineal feet of sheet pile between house and floodwall since excavation results in a 1:1 slope	100 ft * 30 ft = 3000 sq ft	\$85/sq ft	\$255,000
During construction pumping of flow trapped between the floodwall and residence		Lump sum	\$15,000
Permanent pumping of flow trapped between the floodwall and residence	sump pump	Lump sum	\$15,000
Landscaping - topsoil, seeding, trees	199 ft*200 ft = 4444 sq yd	\$8/sq yd	\$35,554
Engineering design	10% of construction		\$153,908

The total of additional costs is \$592,908. The floodwall cost is \$1,100,200. The subtotal is \$1,692,994. Since this is planning level cost prior to design a 30% contingency should be added resulting is a **total cost through construction of \$2,200,892.**

Clay levee installation \$300/ft \*75 foot lot = \$22,500 (plus demolition and purchase)



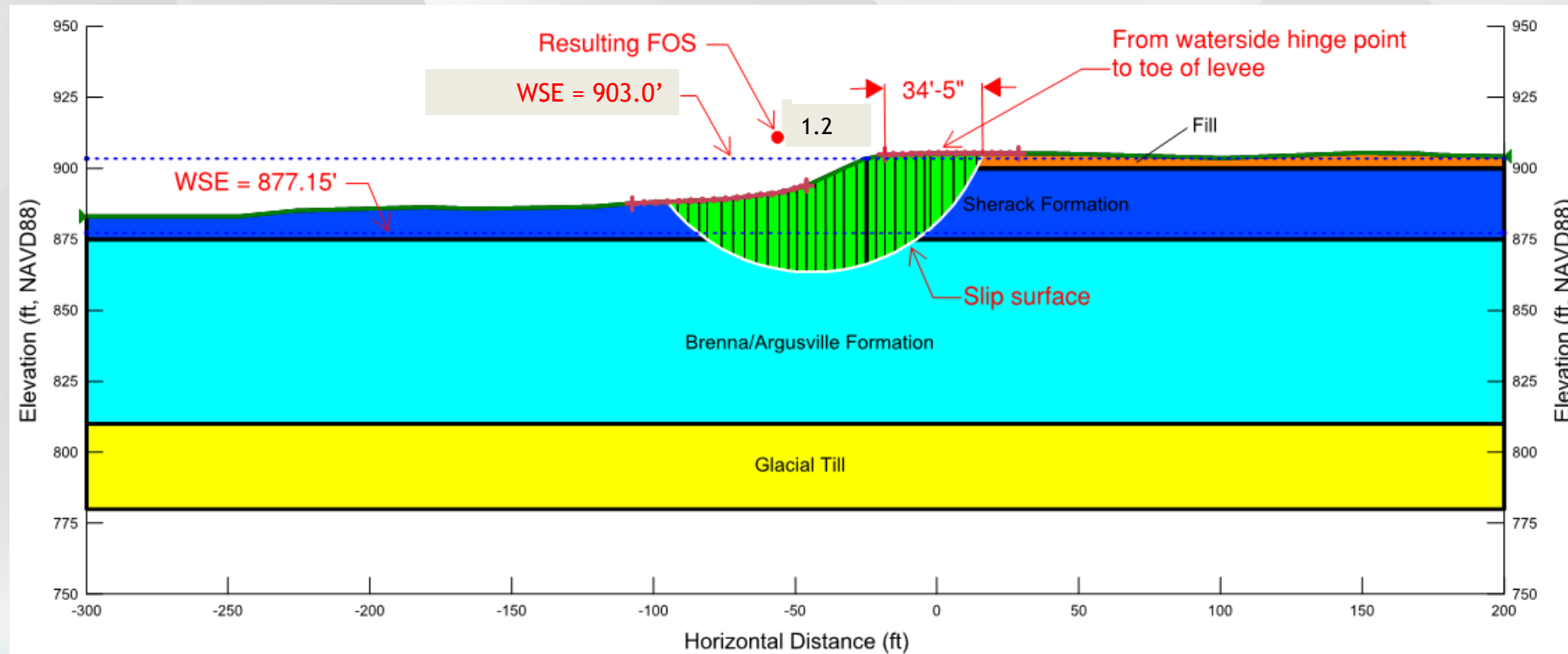
# Properties Removed from Floodplain





# Geotechnical Stability

## Belmont Levee Rapid Drawdown stability model results





# Estimated Project Cost

- Estimated project cost for recommended alignment\*:
  - Levee and floodwall recommended alignment - \$3.4 M
  - 1458 South River Drive Floodwall Option- \$5.6M





Address	Owner(s)
1422 South River Road	Andrew and Nancy Froelich
1458 South River Road	John and Sherian Stern
1502 South River Road	Nancy Perkins
1514 South River Road	Daniel and Edna Holm
1525 South River Road	Thomas and Jacqueline Jabens
245 Lindenwood Drive South	Neil Graf
305 Lindenwood Drive South	Thomas Madsen
208 Linden Avesnue South*	Douglas Anderson
* = Easement only	