



# Stormwater Issues on Monona Golf Course –Related to E. Dean Ave., Reconstruction 2021

**BPC**

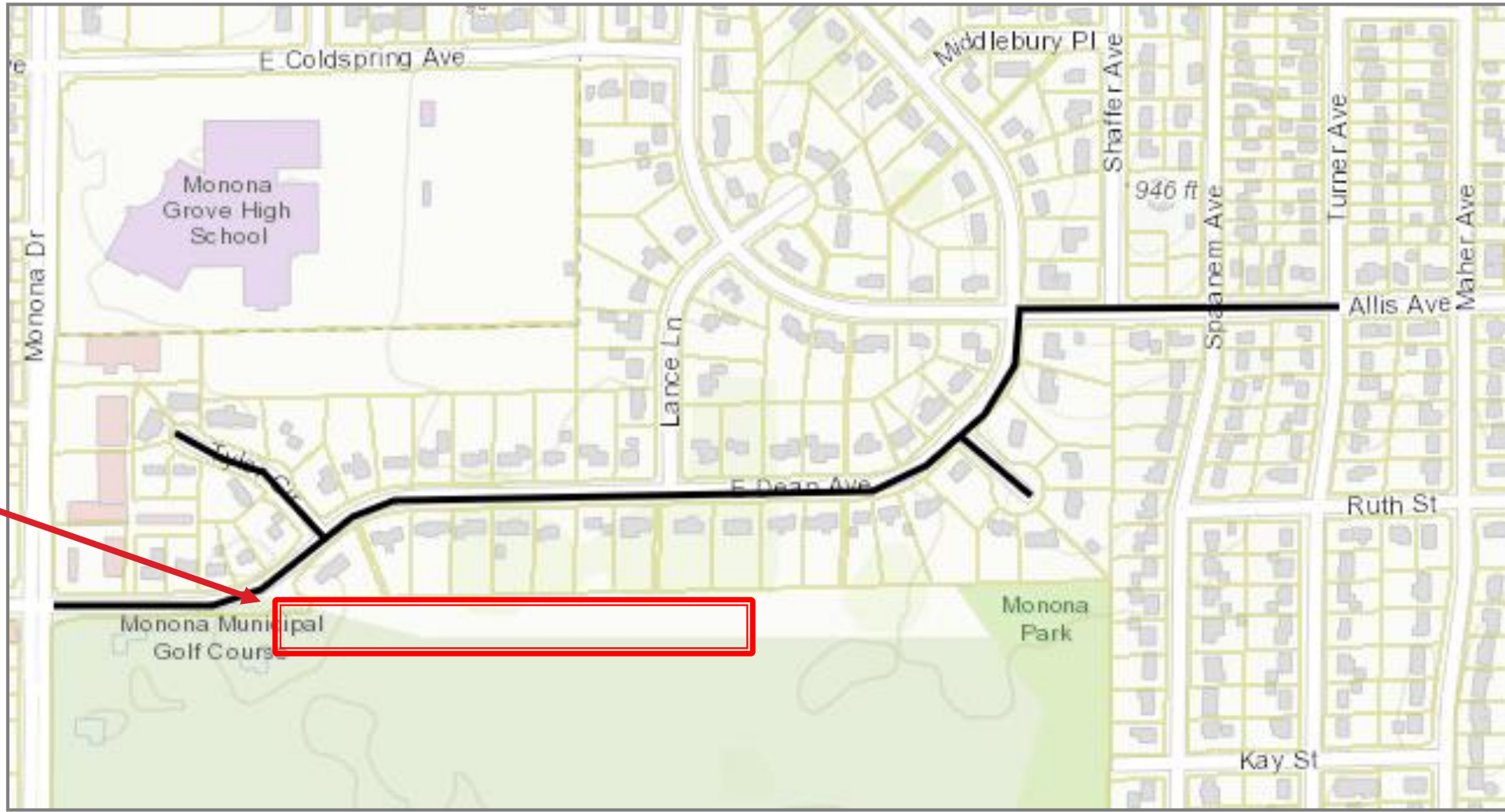
**by City of Madison Engineering Division**

**2-10-2021**

# Outline

- Problem Recap—Stormwater Drainage Issues
- Proposed Stormwater Solution
- Impacts
- Summary of Benefits

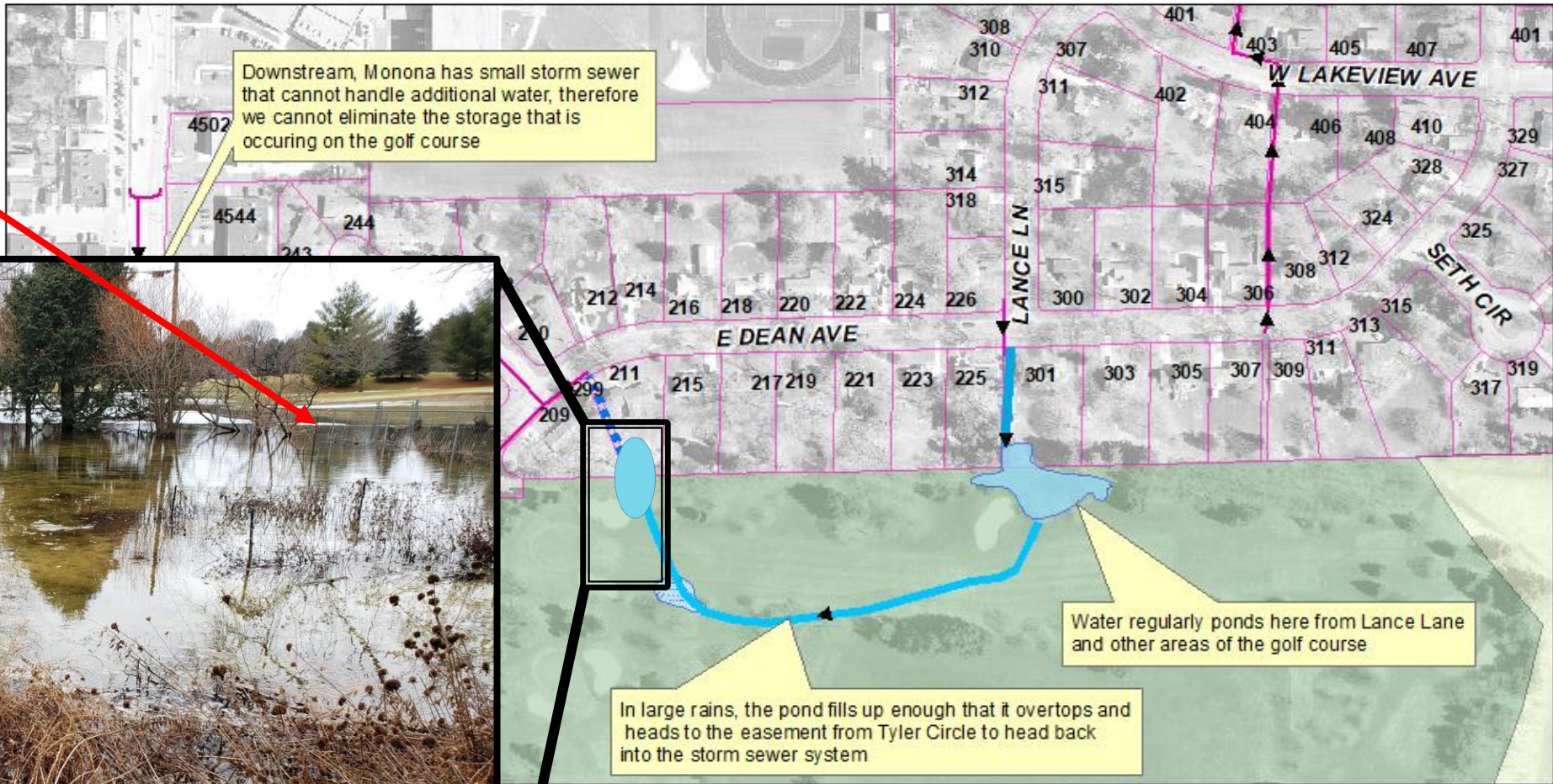
# Dean Ave St Reconstruction, Project Location



Potential impacts to Monona Golf Course

# Monona Golf Course - Part of Stormwater System

Property line



well

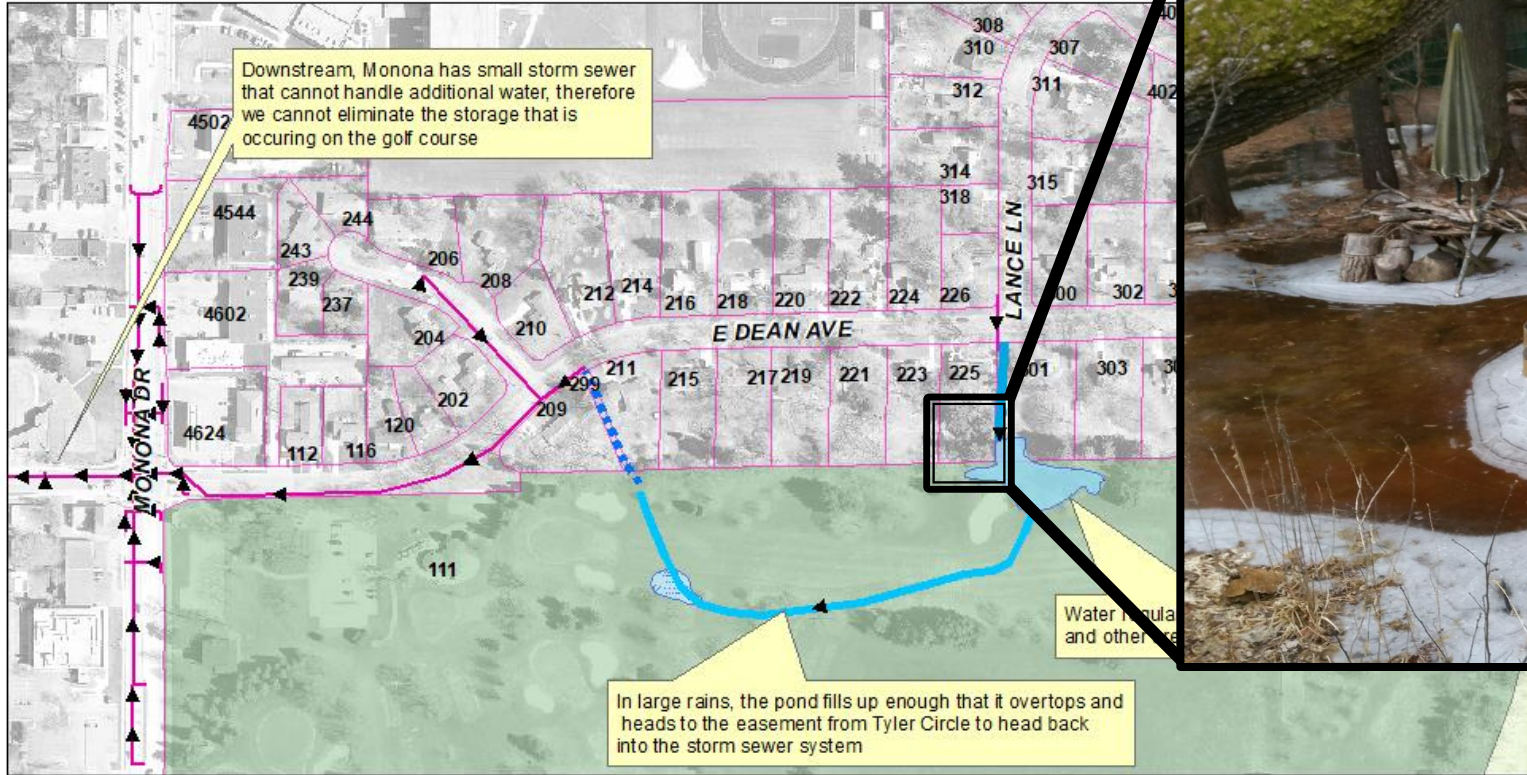
- Ownership Parcels
- Monona Golf Course
- Monona Park

vent

0 250 500 Feet

N

# Monona Golf Course - Part of Stormwater System



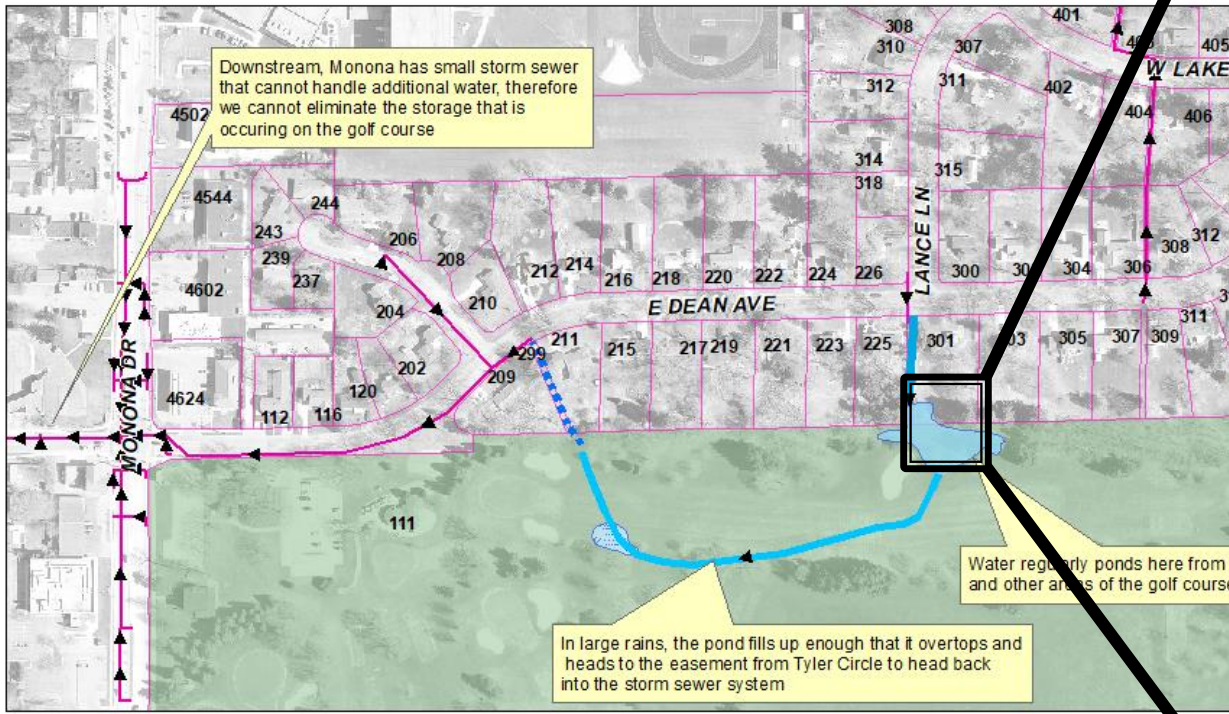
- ..... Intended flowpath, but does not drain well
- Overland flow of stormwater
- Stormwater Pipes
- Water ponds in spring or high runoff event
- Fairway can be wet
- Ownership Parcels
- Monona Golf Course
- Monona Park

0 250 500 Feet



# Monona Golf Course - Part of Stormwater System

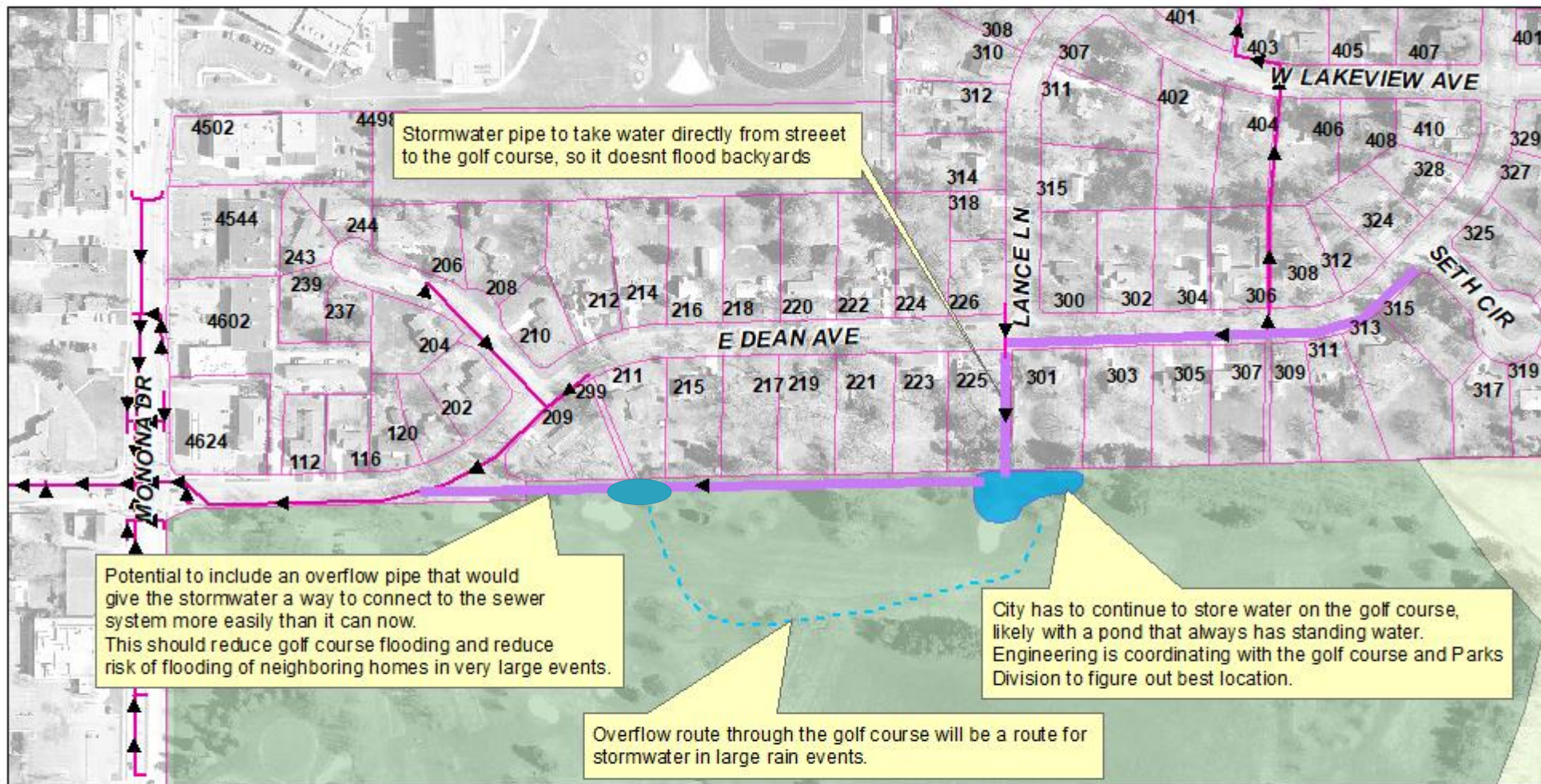
Property line



- Intended flow path, but does not drain well
- ▶▶▶▶▶ Overland flow of stormwater
- ▶▶▶▶▶ Stormwater Pipes
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# Previously Discussed Stormwater System Improvements



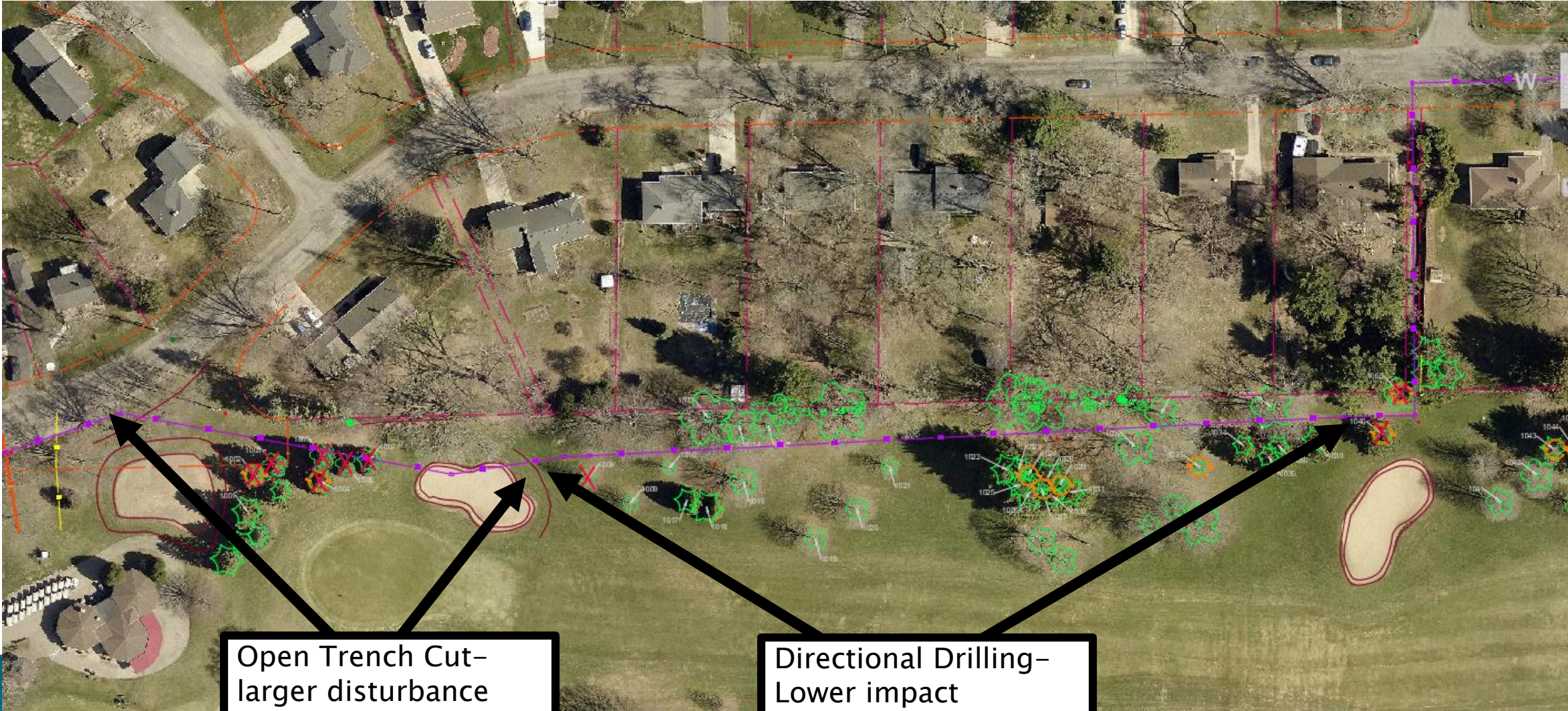
- Preliminary concept shown
- Pond or bioretention could be at 1 of two low points
- Overflow pipe thru Golf Course
- Soil borings, tree survey and coordination with Parks/Golf Course will help narrow in on design

Overflow	Ownership Parcels
Potential Storm water Sewer	Monona Golf Course
Existing Stormwater Pipes	Monona Park
Permanent Poned area--location and footprint TBD	

0      250      500 Feet

N

# Proposed Sewer Layout



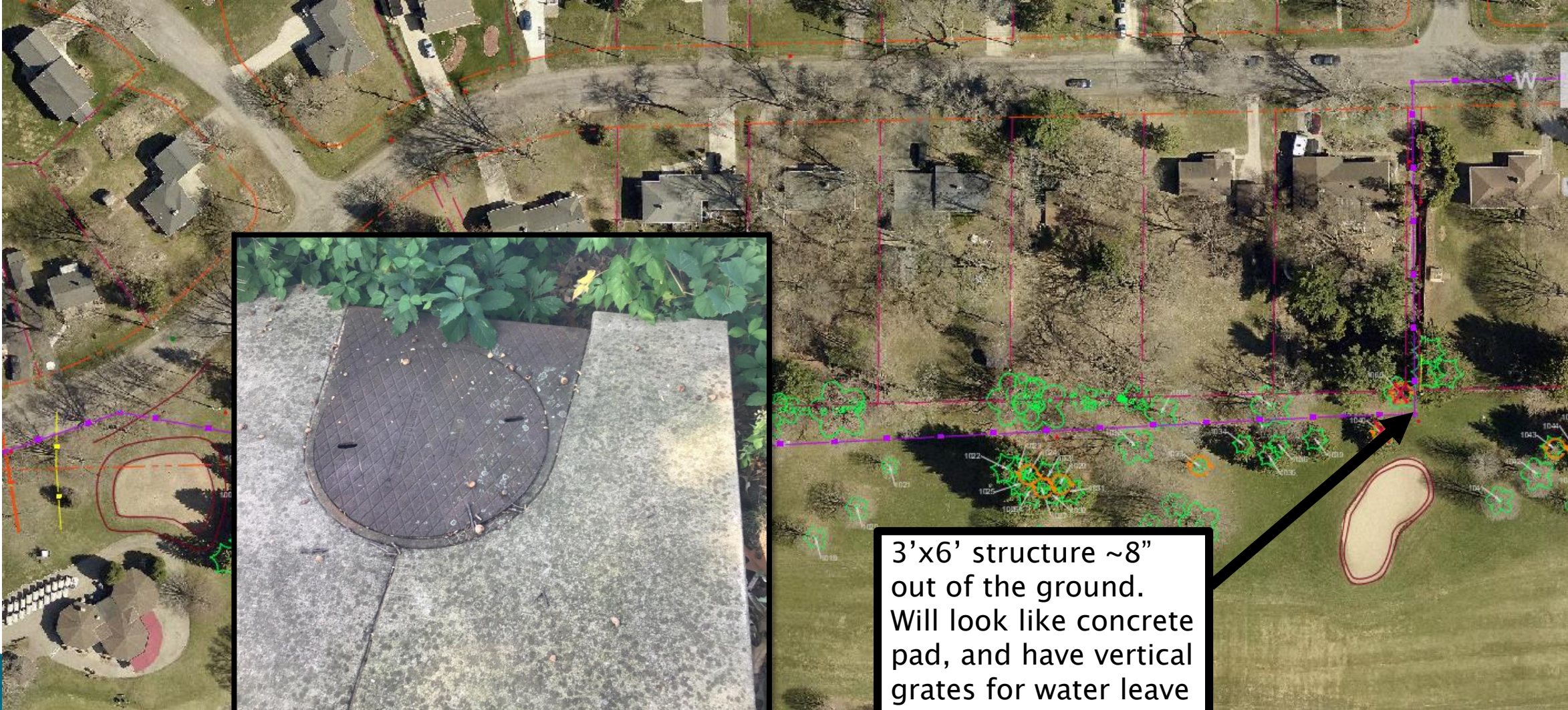
Open Trench Cut—  
larger disturbance  
area but necessary  
due to bedrock

Directional Drilling—  
Lower impact





# Proposed Sewer Layout



3'x6' structure ~8" out of the ground. Will look like concrete pad, and have vertical grates for water leave structure & flow into golf course

# Existing Conditions

Dean Ave

Water flowing  
between houses

Golf course

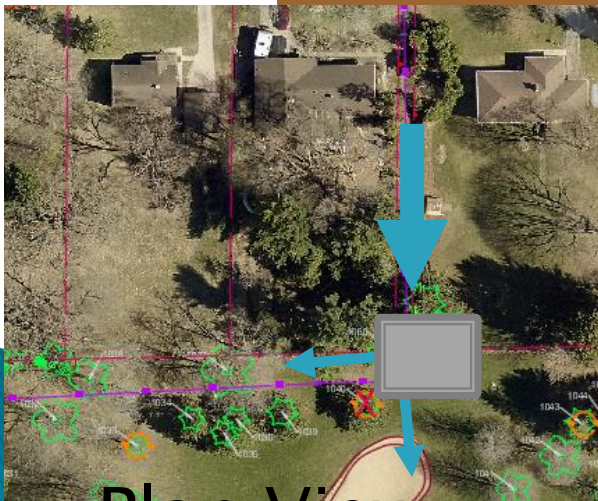
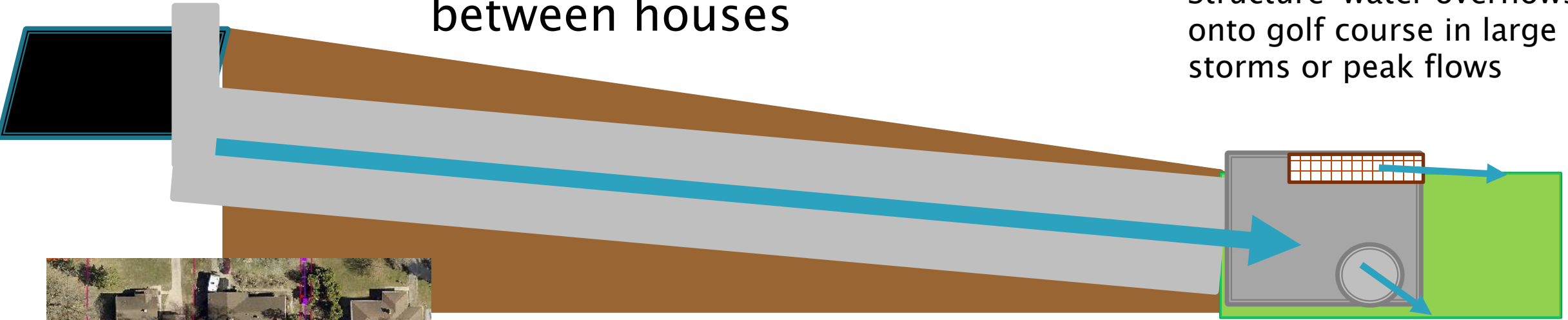
Profile View

# Pond Alternative

Dean Ave

Water flowing between houses

Structure—water overflows onto golf course in large storms or peak flows

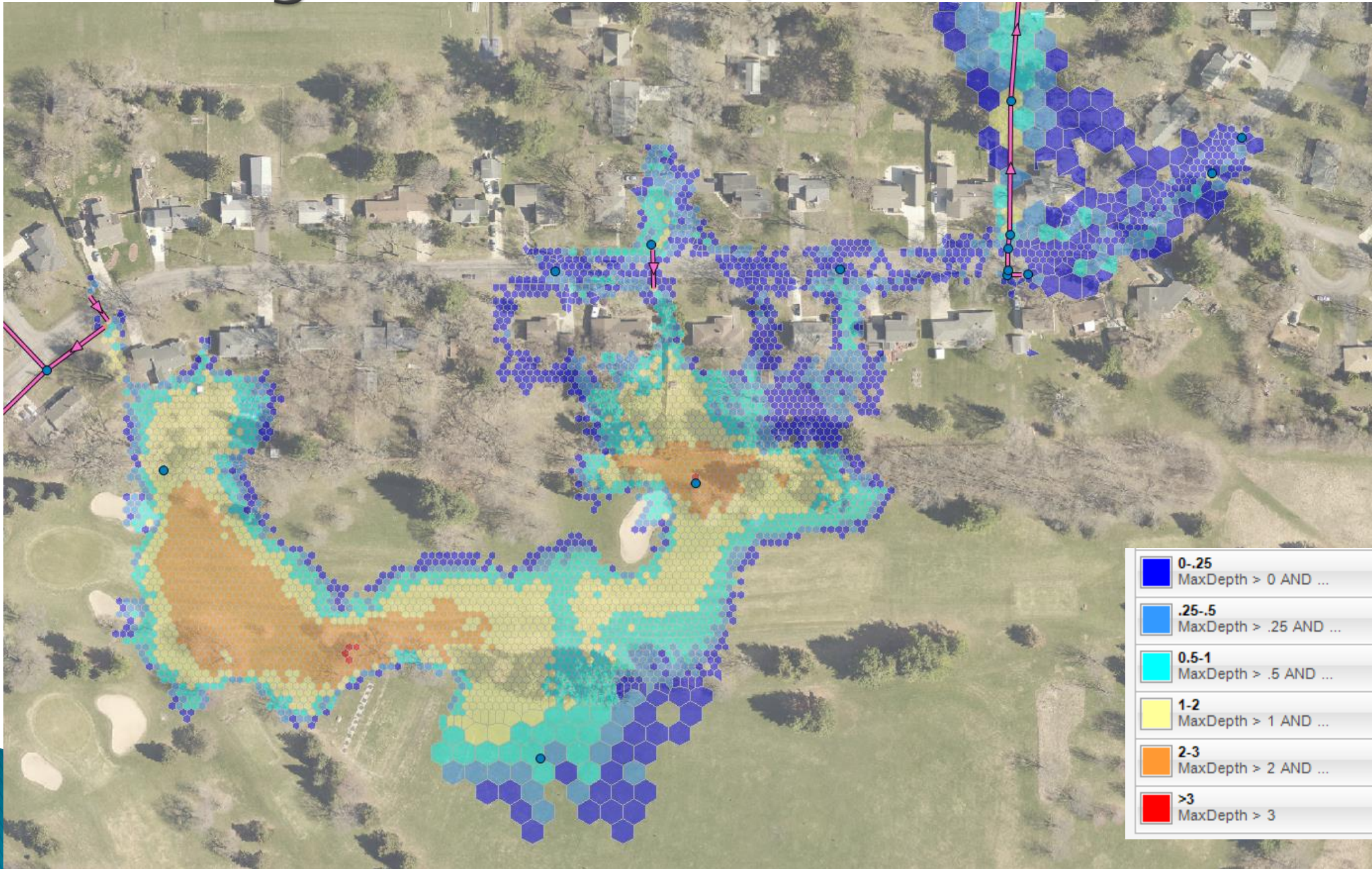


Plan View

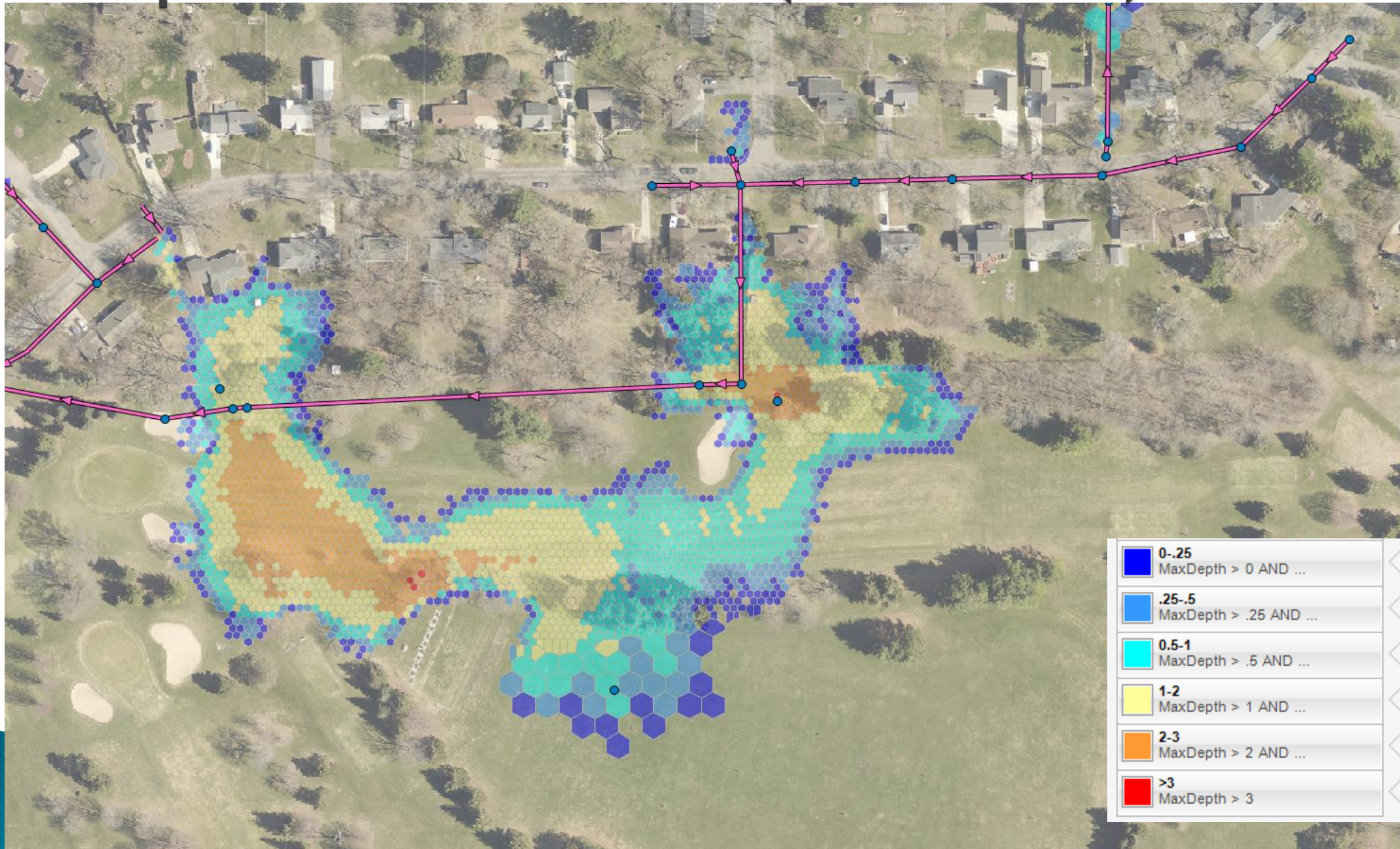
Profile View

Small pipe carries water thru hill due west towards Dean Ave. Allows for drawdown that isn't thru golf course

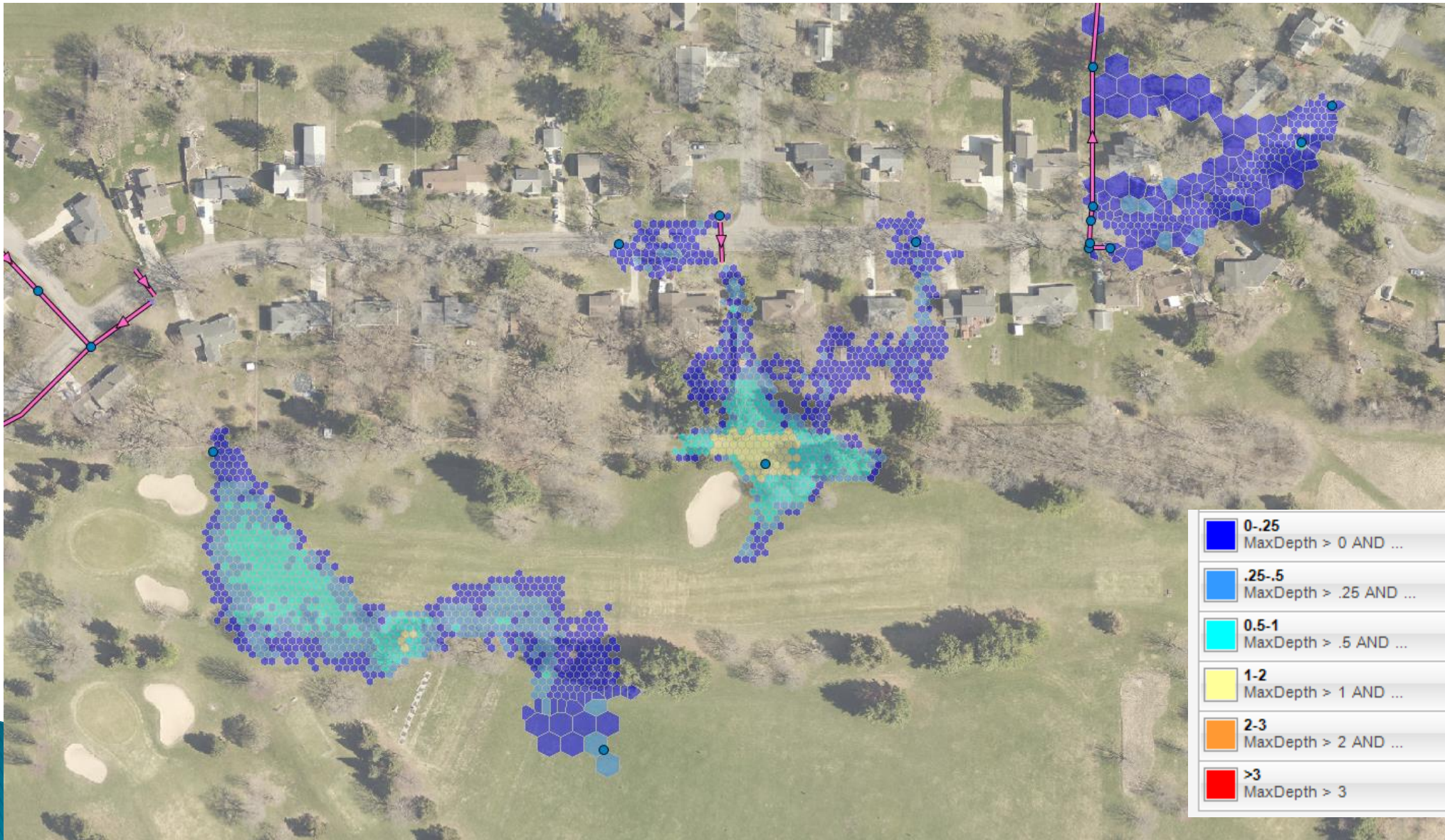
# Existing 1% chance (100-Year)



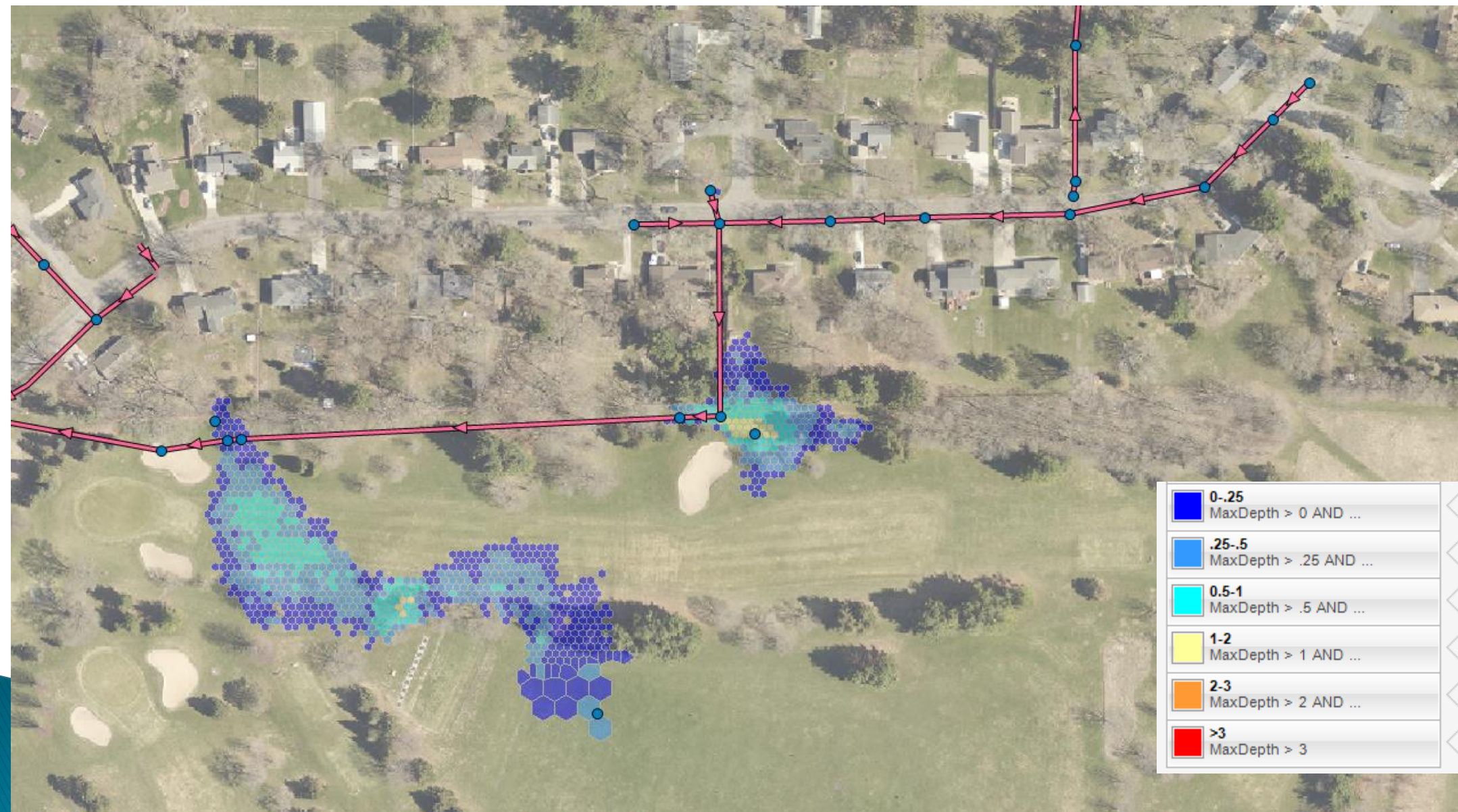
# Proposed 1% chance (100-Year)



# Existing 50% chance (2-Year)



# Proposed 50% chance (2-Year)



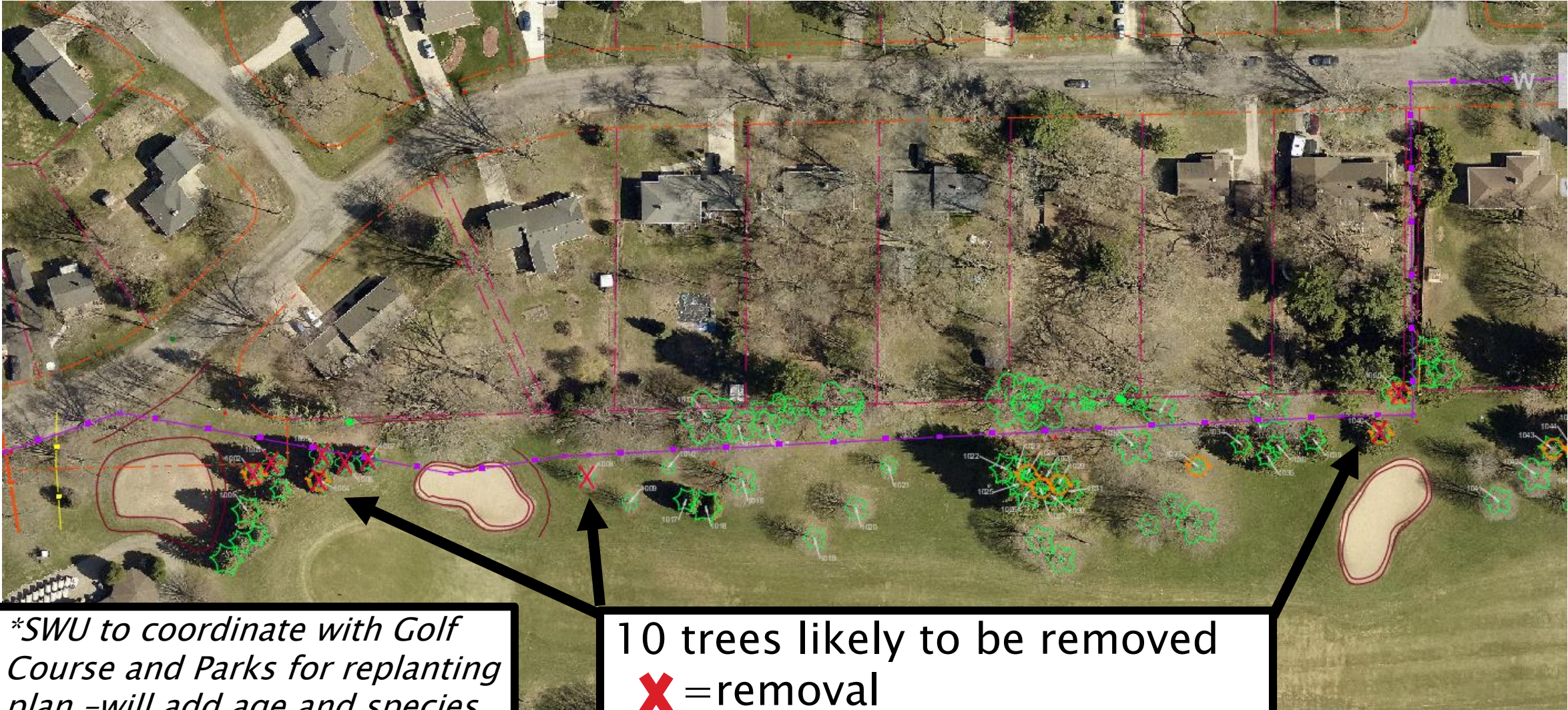
# Proposed Solution Impact

Change from Existing to Proposed	Storm	Change in Flood depth behind 301 E Dean (ft)	Change in flood depth behind 225 E Dean (ft)	Change in depth on W Dean Ave (ft)	Fewer # houses at low flood risk (>.1' next to house)	Fewer # houses at medium risk (>.5' next to house)
	2-year		0.34	0	0	0
5-year		0.2	0	-0.03	0	0
10-year		0.07	0.34	-0.06	1	0
25-year		-0.05	0.67	-0.05	1	0
50-year		0.03	0.3	-0.02	4	0
100-year		0.2	0.19	-0.01	2	2
500-year		0.15	0.15	0	2	0





# Impact on Trees on Golf Course



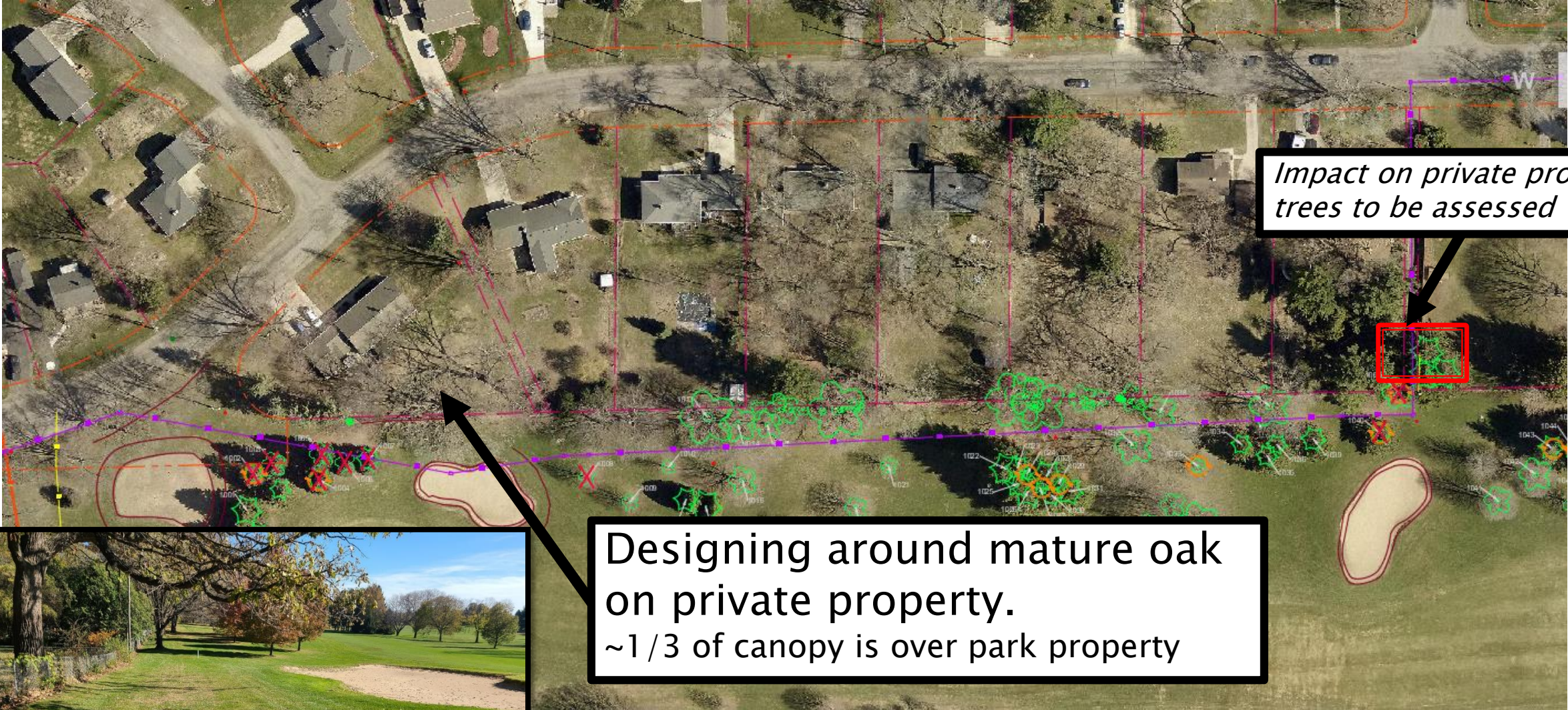
*\*SWU to coordinate with Golf Course and Parks for replanting plan -will add age and species diversity*

10 trees likely to be removed  
X = removal  
○ = rated <60%

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# Impact on Trees on Private Property



*Impact on private property trees to be assessed*

Designing around mature oak on private property.  
~1/3 of canopy is over park property



# Proposed Tree Removals on Golf Course

Tag	DBH	Species	Condition	Notes	Status
1002	14	Picea pungens	12%	Nearly all dead, safety risk	REMOVE
1003	17	Abies concolor	78%	Few dead limbs in lower canopy	REMOVE
1004	15	Picea pungens	2%	Standing dead tree, safety risk	REMOVE
1004	18	Abies concolor	80%	Well structured, healthy	REMOVE, 2 1004's
1005	17	Abies concolor	72%	Mostly healthy, few dead limbs in lower canopy	REMOVE
1006	13	Abies concolor	65%	Mostly healthy, many dead limbs in lower canopy	REMOVE
1007	17	Abies concolor	72%	Mostly healthy, few dead/missing limbs	REMOVE
1008	12	Acer rubrum	90%	Healthy, missing several small branches	REMOVE
1040	15	Pinus nigra	55%	Some insect and fungus damage	REMOVE
1060	12	Tilia americana	50%	Appears healthy, 3 stems, growing through fence, touching power line	REMOVE

Rating	% Rating	Quantity
Excellent	81% to 100%	2
Good	61% to 80%	4
Fair	41% to 60%	2
Very poor	6% to 20%	1
Dead	0% to 5%	1



# Terrace Rain Garden



- ▶ So far, 6 homes upstream of golf course have opted into the terrace rain garden program
- ▶ These rain gardens are not included in the model, but would further reduce golf course flooding in small events (50% chance, 25% chance)
  - Will have no impact on large events
- ▶ City offered reduced price, \$100, per BPC suggestion

# Summary of Project Benefits

- ▶ Reduces flood risk of golf course's neighbors on Dean
- ▶ Will lessen impact of smaller storm events on golf course and neighbors
- ▶ Provides outlet to enclosed depression—flood water can recede quicker
  - Will allow a place for water to exit golf course when the ground is frozen and cannot infiltrate
- ▶ Golf course stormwater component is essential to reconstructing Dean Ave
- ▶ Construction timing will be coordinated to reduce impact on golf play
- ▶ Street reconstruction should have limited impacts to golf course access

# Questions or feedback?



# Contact Information & Resources

## ➤ City Staff

- Jim Wolfe, Project Manager, 608-266-4099, [jwolfe@cityofmadison.com](mailto:jwolfe@cityofmadison.com)
- Jojo O'Brien, Stormwater Engineer, 608-266-9721, [jobrien@cityofmadison.com](mailto:jobrien@cityofmadison.com)

## ➤ Project Website: <https://www.cityofmadison.com/engineering/projects/dean-ave-east-and-allis-ave>

## ➤ Facebook – City of Madison Engineering

# Tree Rating Information (additional background)

Rating	Health	Structure	Form	% Rating
Excellent	High vigor and nearly perfect health with little or no twig dieback, discoloration, or defoliation.	Nearly ideal and free of defects.	Nearly ideal for the species. Generally symmetric. Consistent with the intended use.	81% to 100%
Good	Vigor is normal for the species. No significant damage due to disease or pests. Any twig dieback, defoliation, or discoloration is minor.	Well-developed structure. Defects are minor and can be corrected.	Minor asymmetries/deviations from species norm. Mostly consistent with the intended use. Function and aesthetics are not compromised.	61% to 80%
Fair	Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twig dieback, defoliation, discoloration and/or dead branches may comprise up to 50% of the crown	A single defect of a significant nature or multiple moderate defects. Defects are not possible to correct or would require multiple treatments over several years.	Major asymmetries/ deviations from species norm and/or intended use. Function and/or aesthetics are compromised.	41% to 60%
Poor	Unhealthy and declining in appearance. Poor vigor. Low foliage density and poor foliage color are present. Potentially fatal pest infestation. Extensive twig and/or branch dieback.	A single serious defect or multiple significant defects. Recent change in tree orientation. Observed structural problems cannot be corrected. Failure may occur at any time.	Largely asymmetric/abnormal. Detracts from intended use and/or aesthetics to a significant degree.	21% to 40%
Very poor	Poor vigor. Appears to be dying and in last stages of life. Little live foliage.	Single or multiple severe defects. Failure is probable or imminent.	Visually unappealing. Provides little or no function in the landscape.	6% to 20%
Dead				0% to 5%