

Chapter 71 & 72 Ordinance Amendment

The Stormwater Program

- Multi-faceted, Holistic Management
 - Stormwater Masterplan Efforts
 - Restructuring Stormwater Utility Rate (ERU System)
 - Incentivizing Green Infrastructures
 - Regional detention
 - Updates to Chapter 71 & 72 including Topsoil/Soil quality

Background

- State 4” Topsoil Rule Modified, 2015
 - Topsoil not required
 - Council goal setting August 2015

- City topsoil policy drafted in Summer, 2015
 - First presented September 2015
 - Requires soil quality restoration

Outreach Completed

- 12+ Month effort
- Home Builder's Association Meetings (September 2015-October 2016)
- Infrastructure Committee
 - recommended go to City Council (July 2016)

Ordinance Amendments

- Chapter 71 and 72- requires a Soil Quality Management Plan be submitted for all projects requiring an erosion control permit.
- Requires topsoil management as outlined in the Iowa Stormwater Management Manual or the Topsoil Method
- Establish Erosion Control Permit Application Fee
- Refining administrative rules for better efficiency

Greater Cedar Rapids HBA Development Council Proposal

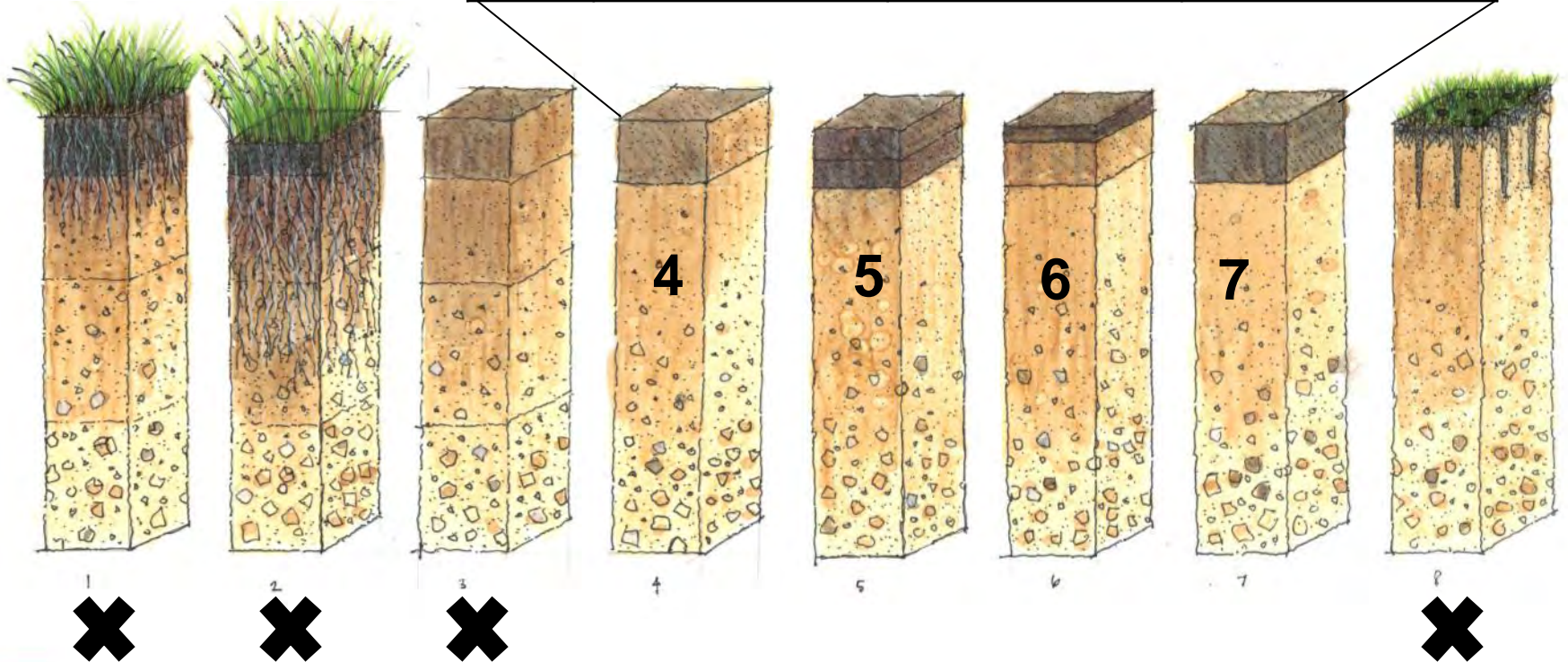
- *“HBA recognizes the value of healthy lawns, minimization of soil compaction, decreased run off, and the feasible preservation of top soil on-site are worthwhile objectives”*
- Proposed a 2-step process
 - Retain all topsoil on-site and spread to 4 in.
 - If 4 in. is not available will select 1 of 8 methods available per the Iowa Stormwater Management Manual

Recommended Changes Based on Home Builder Association Input

Concerns/Recommendations	City's Response
Tillage	Incorporate 4" Topsoil Method as an option
Cost	Flexibility of 8 Iowa Stormwater Manual Methods & 4" Topsoil Method
Sod be considered in the depth requirement	Sod will be considered as part of the soil depth (1")
Site exceptions	Implementation on disturbed areas. Other site exceptions can be made on a case by case basis
Existing plats	Exemption may be made on sites where grading has commenced or been completed prior to January 1, 2017.

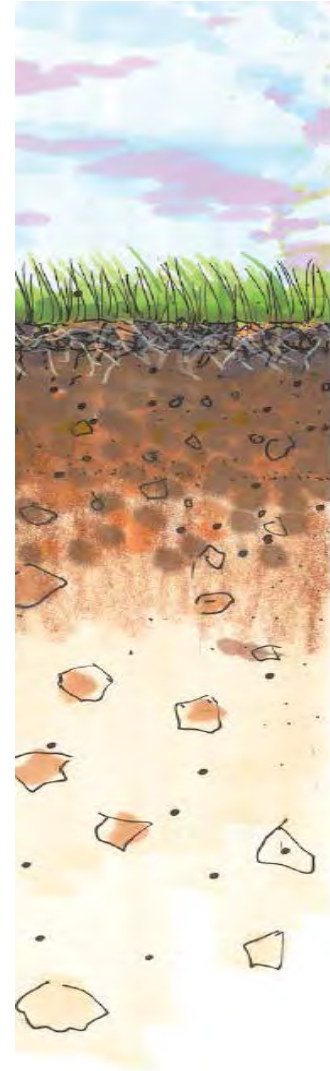
Methods

Method	Tillage Depth (inches)	Topsoil Depth (inches)	Compost Depth (inches)
4	0	8	0
5	1-4	4-7	0
6	6	1	1
7	8	0	2
Topsoil	0	4	0



Topsoil Benefits

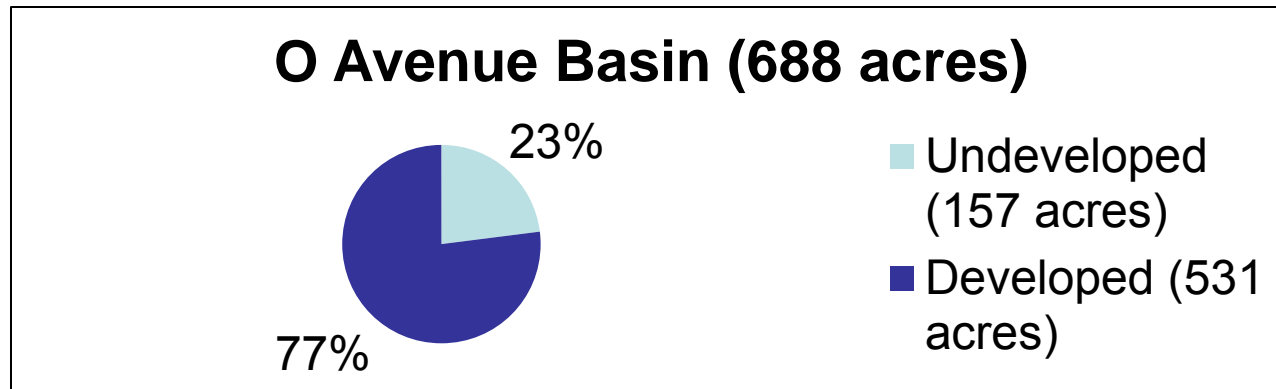
- Aligns with City's Vision and EnvisionCR Goals and Stormwater Master Plan Goals
- Reduce Flooding and Erosion
- Enhance Water Quality
- Encourage Aquifer Recharge
- Vital Urban Landscapes
- Provide Flexibility to Developers/Builders



EXTRA SLIDES

Modeled Benefits

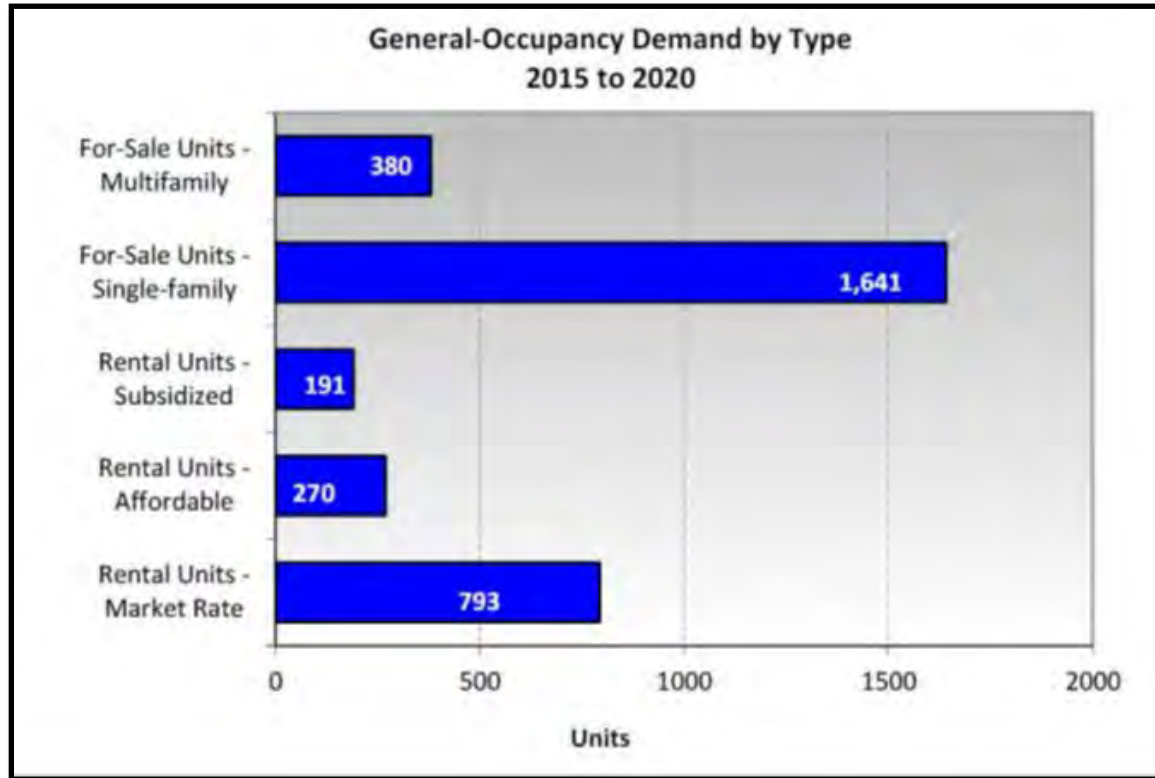
- Potential reduction in flash flooding and downstream detention as quantified for the O Avenue Basin (HDR, August 2016)



- 121 AF of storage is needed for the O-Basin
- If soil quality measures are taken on the remaining undeveloped land it will reduce the overall storage deficit by 7 to 17 AF (6-14%).

Housing Market Activity

Cedar Rapids is projected to need an additional 1,641 single family homes by 2020.



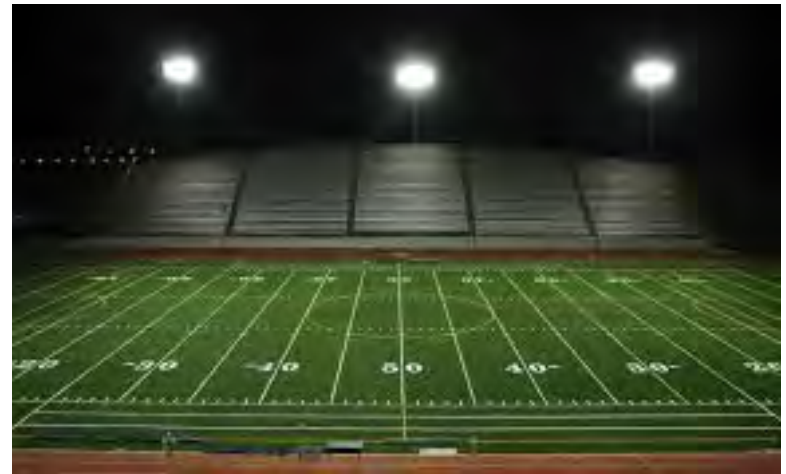
“Update of Comprehensive Housing Needs Analysis for Cedar Rapids, Iowa” by Maxfield Research & Consulting, October 2015

Future Stormwater Management

Projected 1641 additional lots

- Typical rain event (1.25") on residential lot:
- 1361 ft³ (**10,180 gallons**) water per lot, per rain event
- 2,233,810 ft³ (**16,710,059 gallons**) water for all new demand lots, per rain event
 - =50 football fields with 1 foot of water

“A pinch of prevention is worth a pound of cure”



Compaction Impacts

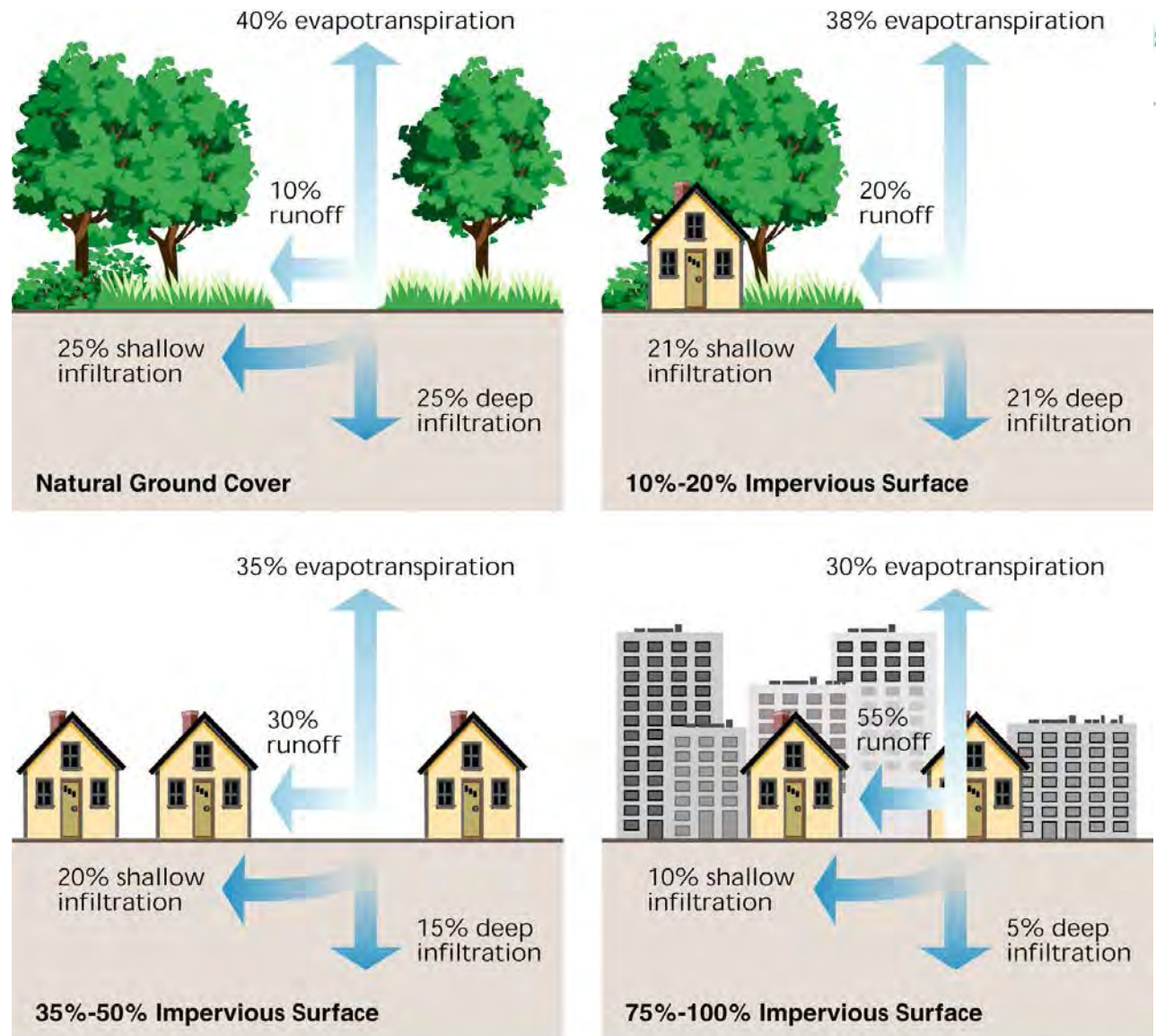
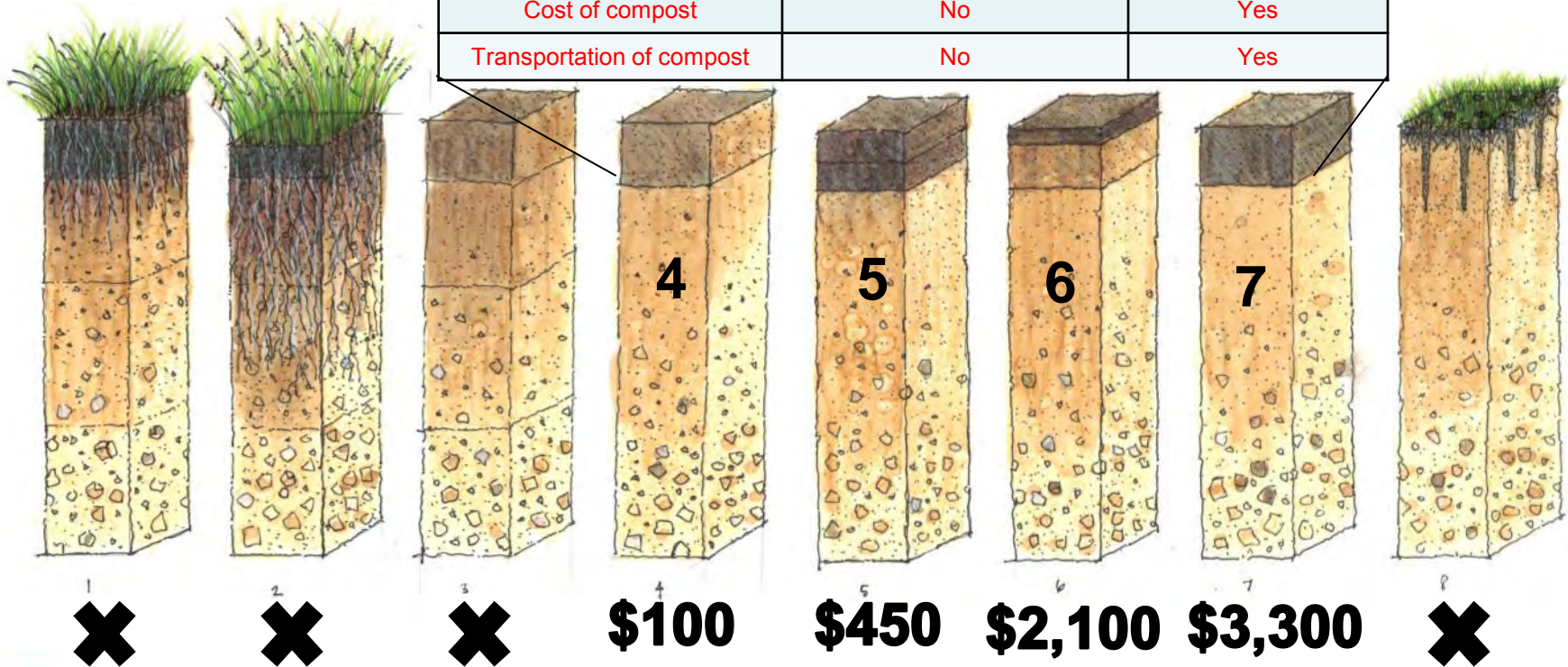


Fig. 3.21 – Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98).
By the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)

Estimate of Cost

Practices	Current Required Practices	Additional Cost
Retain topsoil	Yes	No
Transport topsoil within development	Yes	No
Spreading of topsoil	Yes	No
Seeding or sodding	Yes	No
Minimize compaction	Yes	No
Decompaction Practice	No	Yes
Cost of compost	No	Yes
Transportation of compost	No	Yes



Example of Cost to Homeowner



- House completed in 2006 (10 years established)
- \$6,000 irrigation system
- Lawncare service 5 times a year (\$75 each time) = \$3750
- Water bill \$120/yr (for last 8 years) = \$960
- **TOTAL = \$10,710**

"I would gladly pay more money as a homeowner up front to have a good lawn health" -Jack Hardin, homeowner

GreenCR

ConnectCR

GrowCR

InvestCR

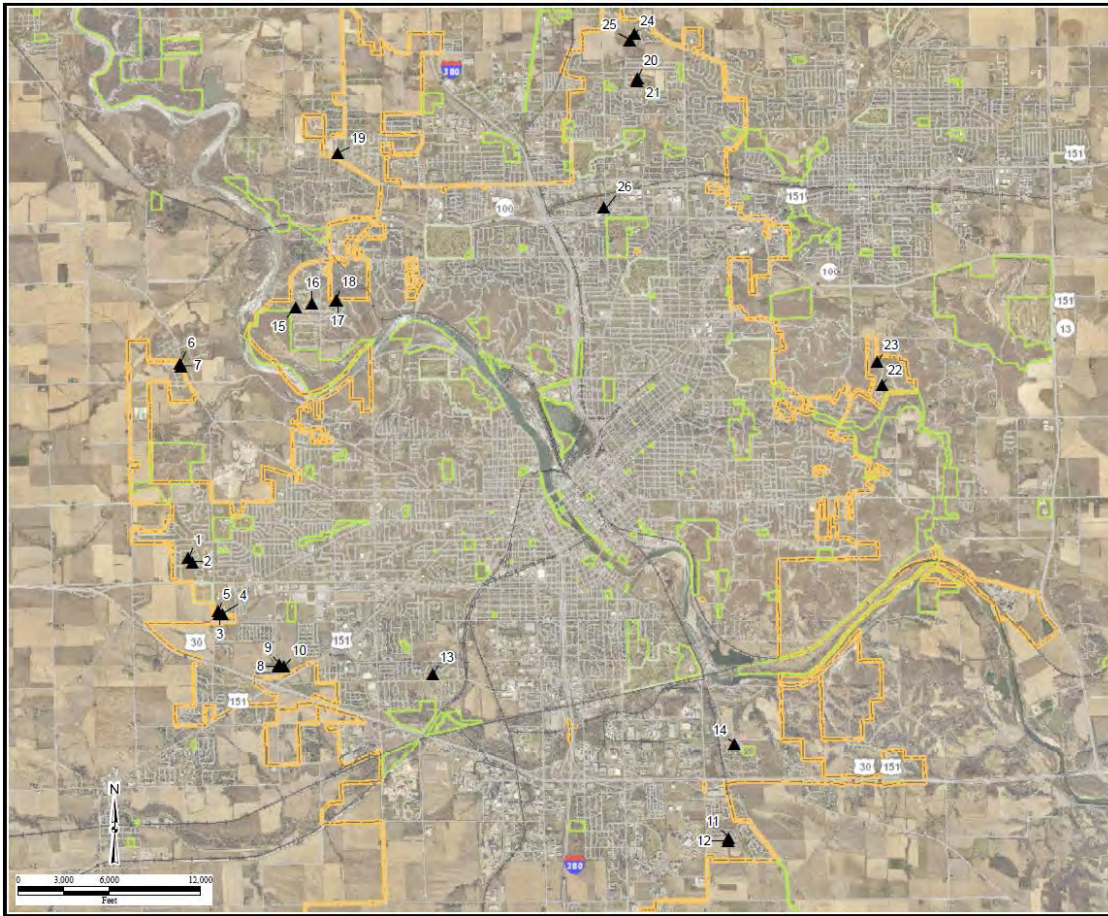


StrengthenCR

PromoteCR

ProtectCR

Residential Soil Sample Locations



- Results (average)
 - Dry Density/Porosity = 1.62 g/cm³
 - 97% compacted
 - 5% organic
 - 7.35 pH
 - 69% clay
 - Silty Clay or Sandy Clay Texture

Soil Sampling Analysis

	Topsoil	Tested Residential Lots (averages)
Organic Matter	$\geq 3\%$	5%
Clay Content	$< 40\%$	69%
pH	6-8	7.35
Texture	Loose, friable	97% compacted
Dry Density/Porosity	$< 1.3 \text{ g/cm}^3$	1.62g/cm³
Infiltration Capacity	$> 0.5 \text{ in/hr}$	0.14 in/hr

- All samples consisted of predominately clay topsoil
- Majority of the lots were compacted beyond the ideal for root growth ($> 1.58 \text{ g/cm}^3$) and infiltration.
- All sites sampled were heavily compacted

Residential Soil Sample Results: Infiltration Capacity

Soil texture class	Hydrologic soil group	Effective water capacity (C_w) (in/in)	Minimum infiltration rate (f) (in/hr)
Sand	A	0.35	8.27
Loamy sand	A	0.31	2.41
Sandy loam	B	0.25	1.02
Loam	B	0.19	0.52**
Silt loam	C	0.17	0.27
Sandy clay loam	C	0.14	0.17
Clay loam	D	0.14	0.09
Silty clay loam	D	0.11	0.06
Sandy clay	D	0.09	0.05
Silty clay	D	0.09	0.04
Clay	D	0.08	0.02

Ideal infiltration: >0.5 in/hr, 'loam-sandy loam', Type B soil

Measured infiltration: 0.14 in/hr, 'clay loam', Type D soil

**Minimum rate: soils with lower rates should not be considered for infiltration

Source: Rawls et al., 1982

Residential Soil Sample

Results: Dry Density

Dry Density (Porosity) = Mass (dry)/Volume

Measurement of amount of pore spaces. Higher the number, less porosity.

Soil Type	Dry Density (g/cm ³)
Sand	1.52
Sandy loam	1.44
Loam	1.36
Silt loam	1.28
Clay loam	1.28
Clay	1.20
Concrete	2.40

- Majority of the soil was clay; however, it did not have the same known dry density/porosity of clay.
- The pores had been compacted at these sites to substantially reduce the amount of pore space available. (Measured was 1.62g/cm³)

Note: The dry density of most soils varies within the range of 1.1-1.6 g/cm³ (Hillel 1980 b). Sources: Linsley et al (1982); Poffijn (1988)

Water Quality

“Values measured in Indian Creek Watershed show suspended solids, turbidity, and chloride increase moving down the watershed. These observations may reflect the increasing urbanization in the lower part of the watershed, with runoff from impermeable surfaces contributing to these parameters.” (Coe College, Cedar River Tributary Study, 2015, p.10)



Expert Analysis of Soil Test Reports

*“The average % compaction of 97% and dry bulk density of 1.62 is a large concern on the overall site. As bulk density increases, large, noncapillary pores in the soil are destroyed, while smaller, capillary pore space increases. **As the compaction and bulk density increase, water infiltration and percolation into and through the soil are significantly reduced.** At these levels I could assure you that many of the lawns and plant material roots have limited to no growth especially during the stressful growing seasons. **Due to the heavy compaction on these sites you can expect very poor performing landscapes that will overall have negative effects on waters ability to be absorbed or infiltrate.**”*

Troy McQuillen,
Golf Course & Athletic Turfgrass Management Assistant Professor
Kirkwood Community College

Commons at Blairs Ferry

Public Hearing and 1st Reading

1. A public hearing will be held to consider granting a change of zone with a Preliminary Site Development Plan for property at 4480 Blairs Ferry Road NE from A, Agriculture Zone District, to R-2, Single Family Residence Zone District, and RMF-1, Multiple Family Residence Zone District, as requested by Genesis Equities, LLC and Calvary Chapel Iowa. (#RZNE-023589-2016)
 - a) First Reading: Ordinance granting a change of zone with a Preliminary Site Development Plan for property at 4480 Blairs Ferry Road NE from A, Agriculture Zone District, to R-2, Single Family Residence Zone District, and RMF-1, Multiple Family Residence Zone District, as requested by Genesis Equities, LLC and Calvary Chapel Iowa

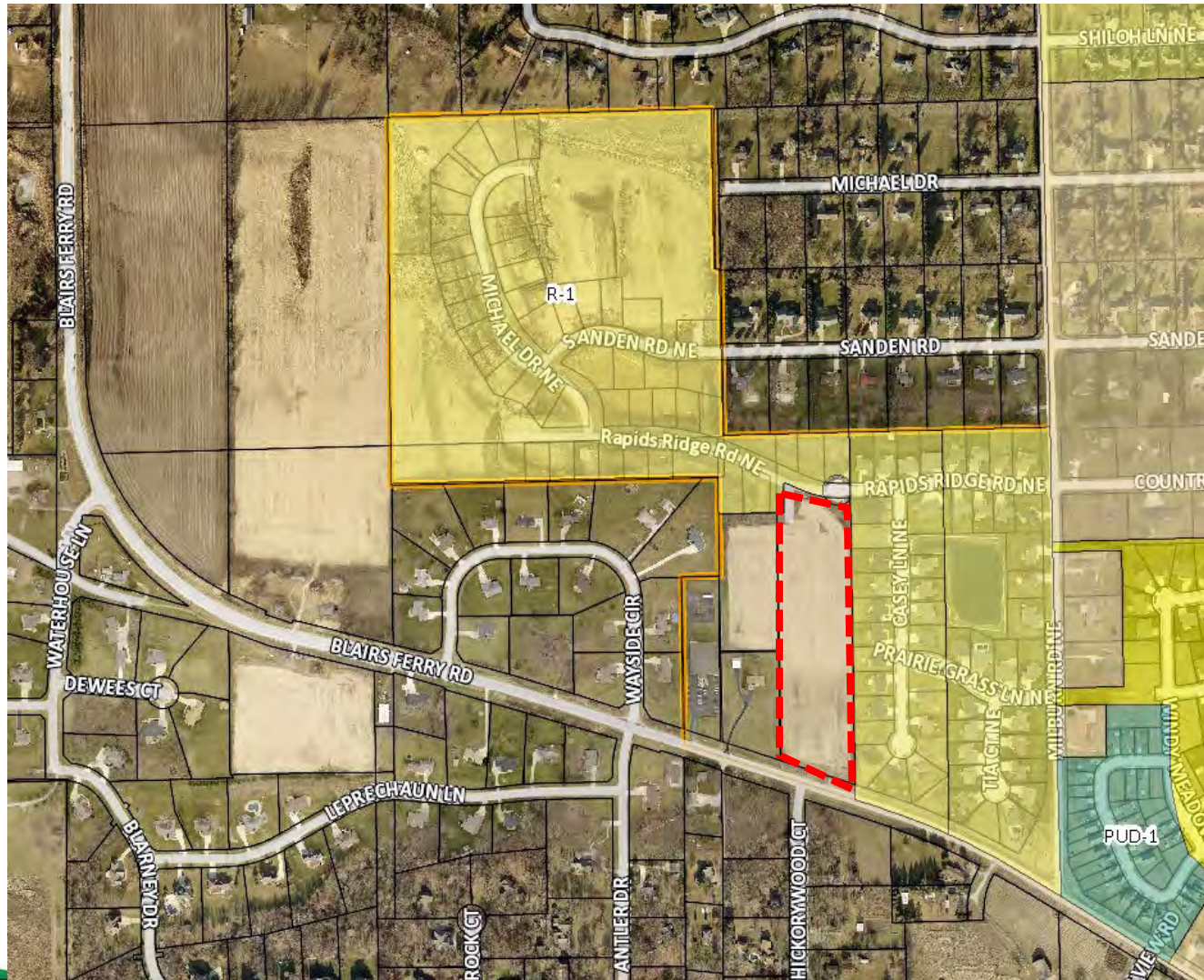
Commons at Blairs Ferry REZONING & PRELIMINARY SITE PLAN



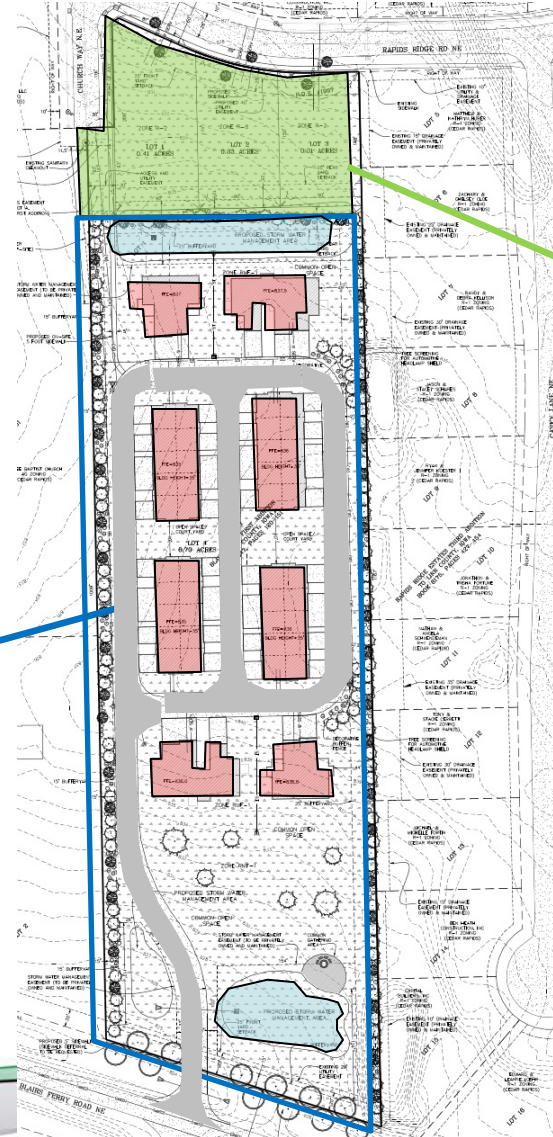
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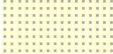



50 townhome units

3 Single
Family Lots

Commons at Blairs Ferry REZONING & PRELIMINARY SITE PLAN



-  Rural
-  Urban Low Intensity
-  Urban Large Lot
-  Urban Medium Intensity

LAND USE TYPOLOGY AREA SUMMARY

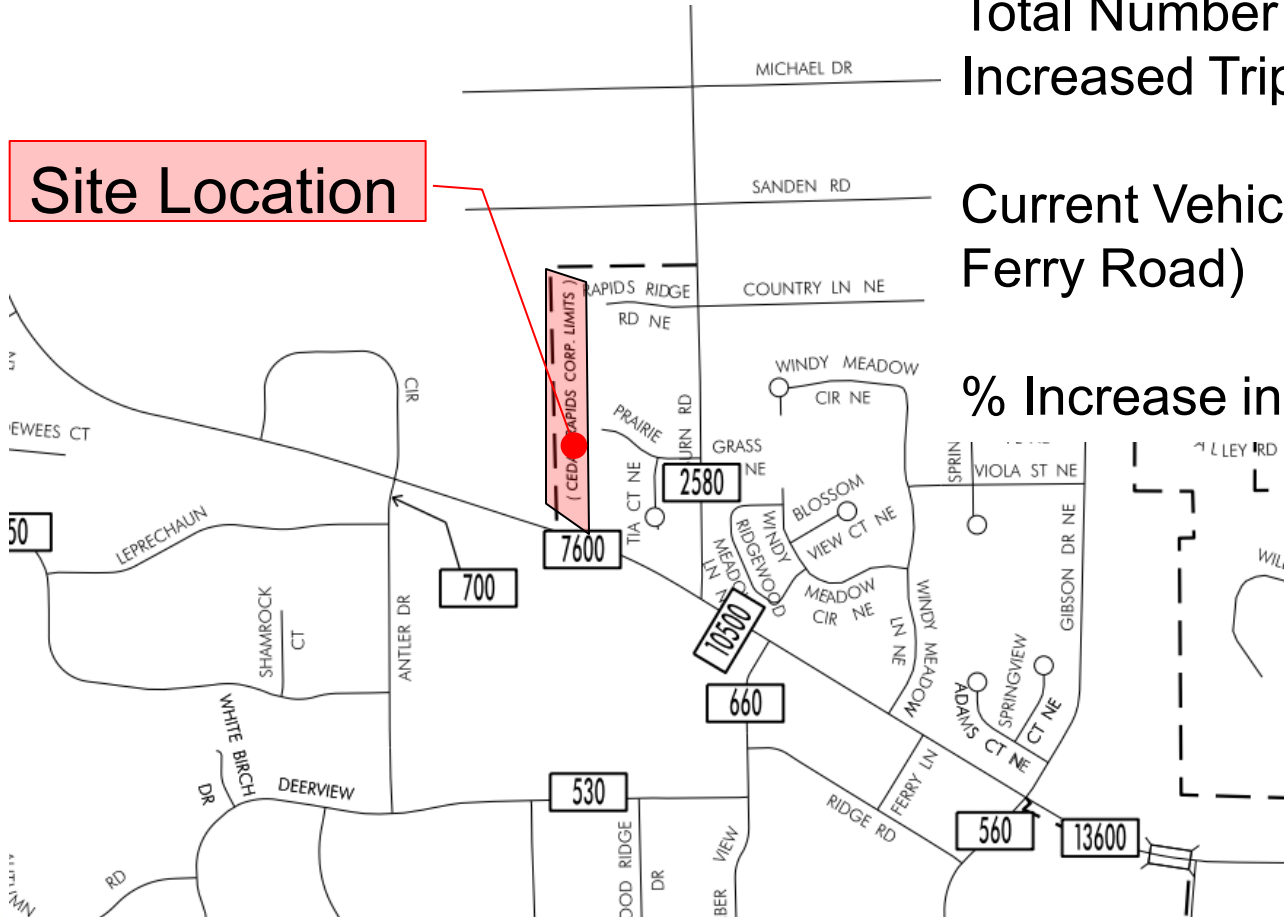
Table 1: Land Use Typology Areas

Land Use Typology Area	Description/Purpose	Residential density (du/A)	Non-residential or Mixed-use intensity (FAR)
AP Agricultural Preserve	Areas preserved for permanent farming and agricultural production.	1 unit/40 acres max	NA
R Rural	Areas that are unlikely to receive urban services. Agriculture and very low-density development will be the probable final use.	1 unit/2 acres max	NA
U-LL Urban-Large Lot	Areas with urban services including very low-density residential constrained by environmental elements, such as steep slopes, waterways, and woodlands.	0-6	0.50 max.
U-LI Urban-Low Intensity	Areas with urban services including relatively low-density residential and neighborhood commercial and service uses.	2-12	0.50 max.

Commons at Blairs Ferry

REZONING & PRELIMINARY SITE PLAN

Site Location



Trip Generation Calculation

Total Number of Units = 50

Increased Trips/Day = 351

Current Vehicles/Day = 7,600 (Blairs Ferry Road)

% Increase in vehicles/day = 4.6%

Commons at Blairs Ferry

REZONING & PRELIMINARY SITE PLAN



Commons at Blairs Ferry

REZONING & PRELIMINARY SITE PLAN

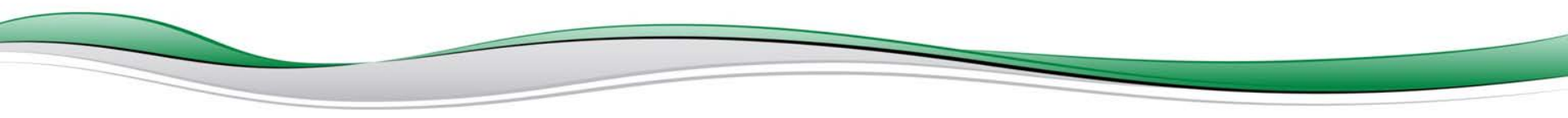


Commons at Blairs Ferry REZONING & PRELIMINARY SITE PLAN

- August 25th – CPC recommendation to deny rezoning request
- September 15th – CPC review and recommendation to approve
- November 15th – City Council Public Hearing & 1st Reading of Ordinance
- December 6th – City Council 2nd & 3rd Readings of Ordinance
- December 10th – Ordinance published in The Gazette



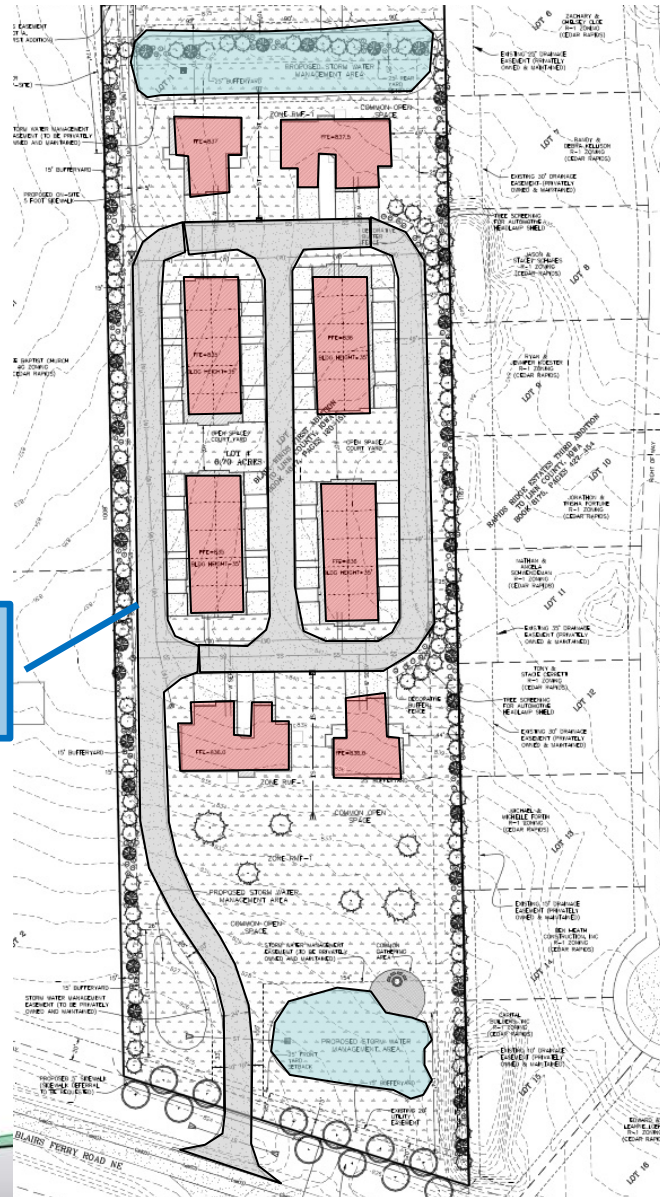
www.Cedar-Rapids.org



Commons at Blairs Ferry

REZONING & PRELIMINARY SITE PLAN

50 units/6.70 ac
= 7.46 DU/A

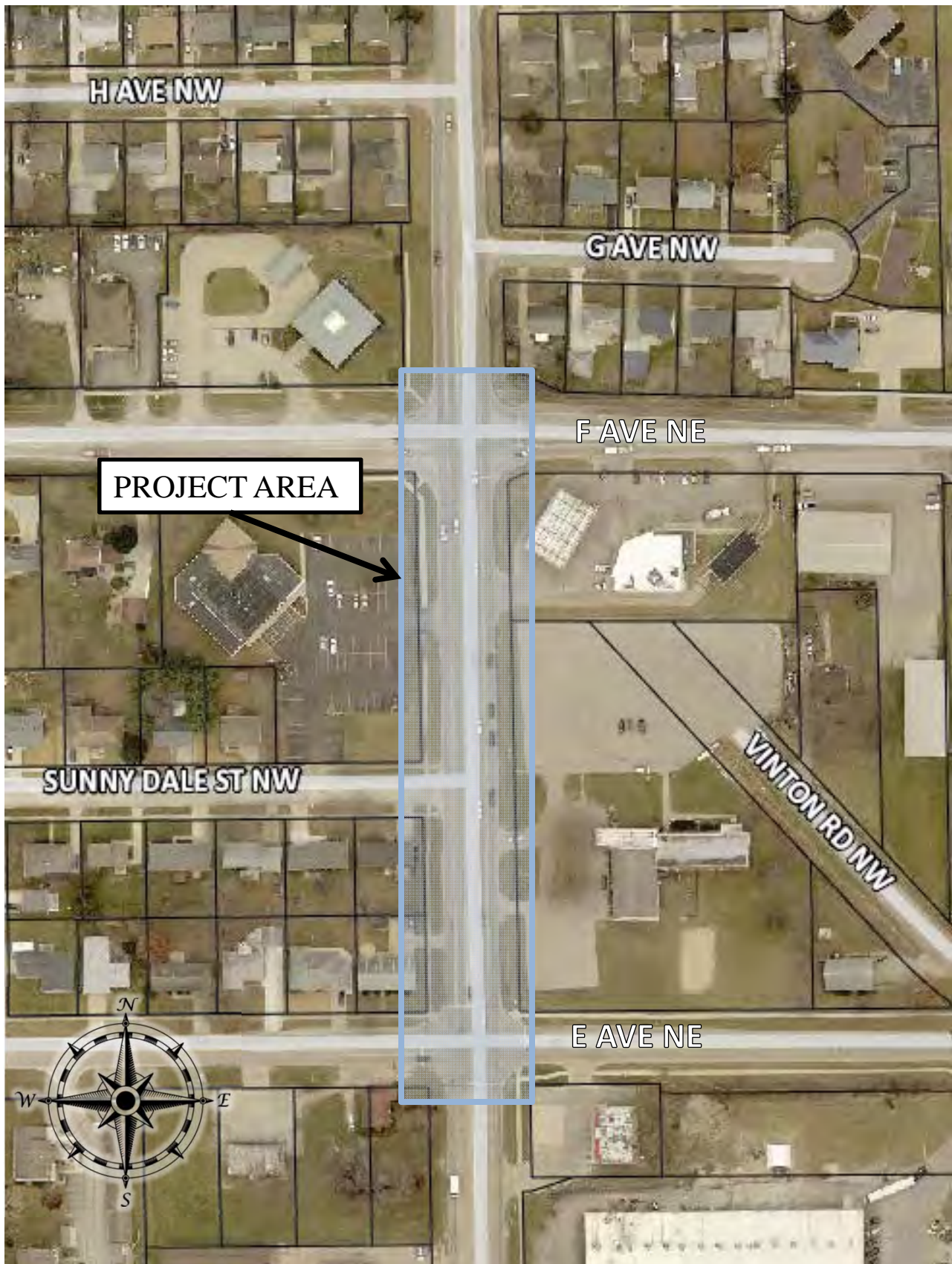


1200 Edgewood Road NW

Rezoning w/Preliminary Site Development Plan

City Council shall consider the following criteria in making its decision on the rezoning request (32.02.030.C.5.e):

- Consistent with the Future Land Use Policy Plan & Comprehensive Plan.
- Consistent with the characteristics of the surrounding area, including any changing conditions.
- Is the property suitable for all uses permitted in the proposed district.
- Will this rezoning protect existing neighborhoods from nearby development at heights and densities that are out of scale with the existing neighborhood.
- Are facilities and services available to serve the subject property while maintaining adequate levels of service to existing development.





116 15th Street NE

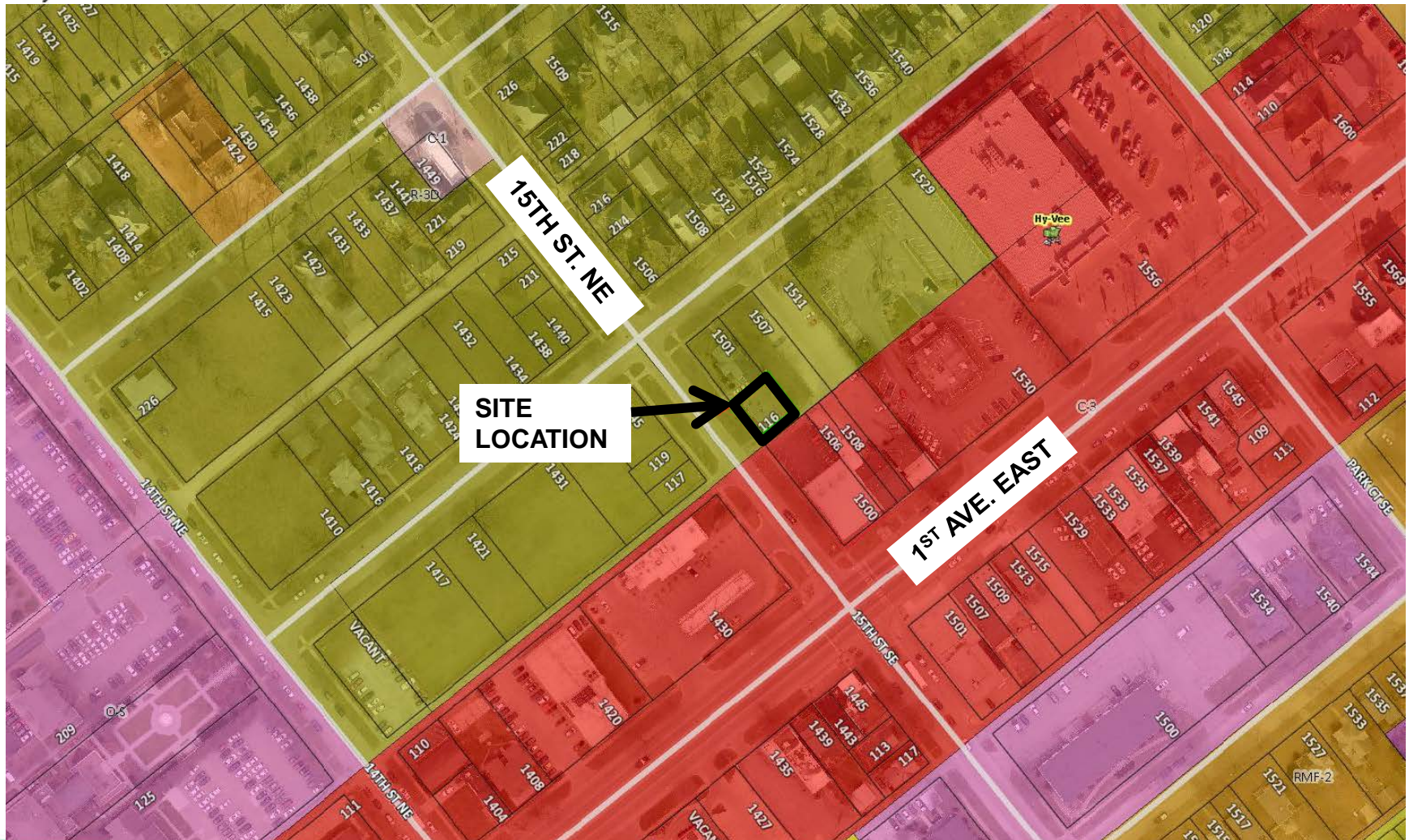


GENERAL INFORMATION:

- Request to rezone 2,500 s. f. parcel from R-3D, Two-Family Residence Zone District to C-1, Mixed Neighborhood Convenience Zone District.
- Plan is to restore fire-damaged structure to mixed-use building.
- Prior to fire-legal non-conforming commercial/office-residential uses.
- Ground floor commercial- 2 residential units on 2nd level.
- Property identified as “Urban-High Intensity” on Future Land Use Map in City’s Comprehensive Plan.
- Commercial and medium to high density residential uses are suitable.
- C-1 District allows for both limited commercial & residential uses.
- City Planning Commission unanimously recommended approval.
- Preliminary Site Development Plan as submitted includes the following:
 - Total lot size – 2,500 s. f.
 - Two-story building – 3,392 s. f. GFA
 - No off-street parking is provided



Zoning Map



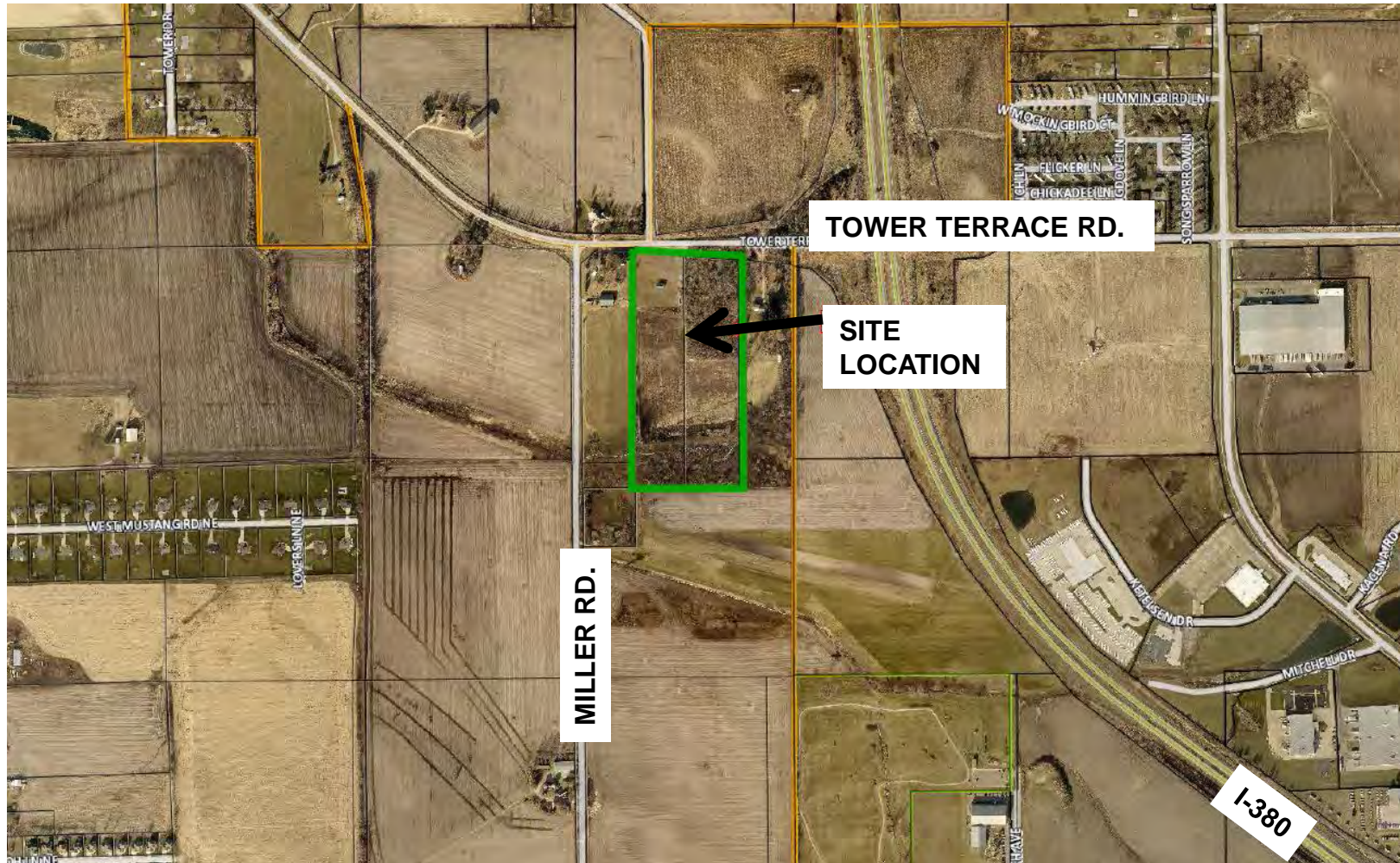
Street View



Next Steps

- December 06, 2016 - City Council 2nd & possible 3rd Readings of Ordinance
- December 10, 2016 - Ordinance published in Cedar Rapids Gazette (Rezoning finalized)

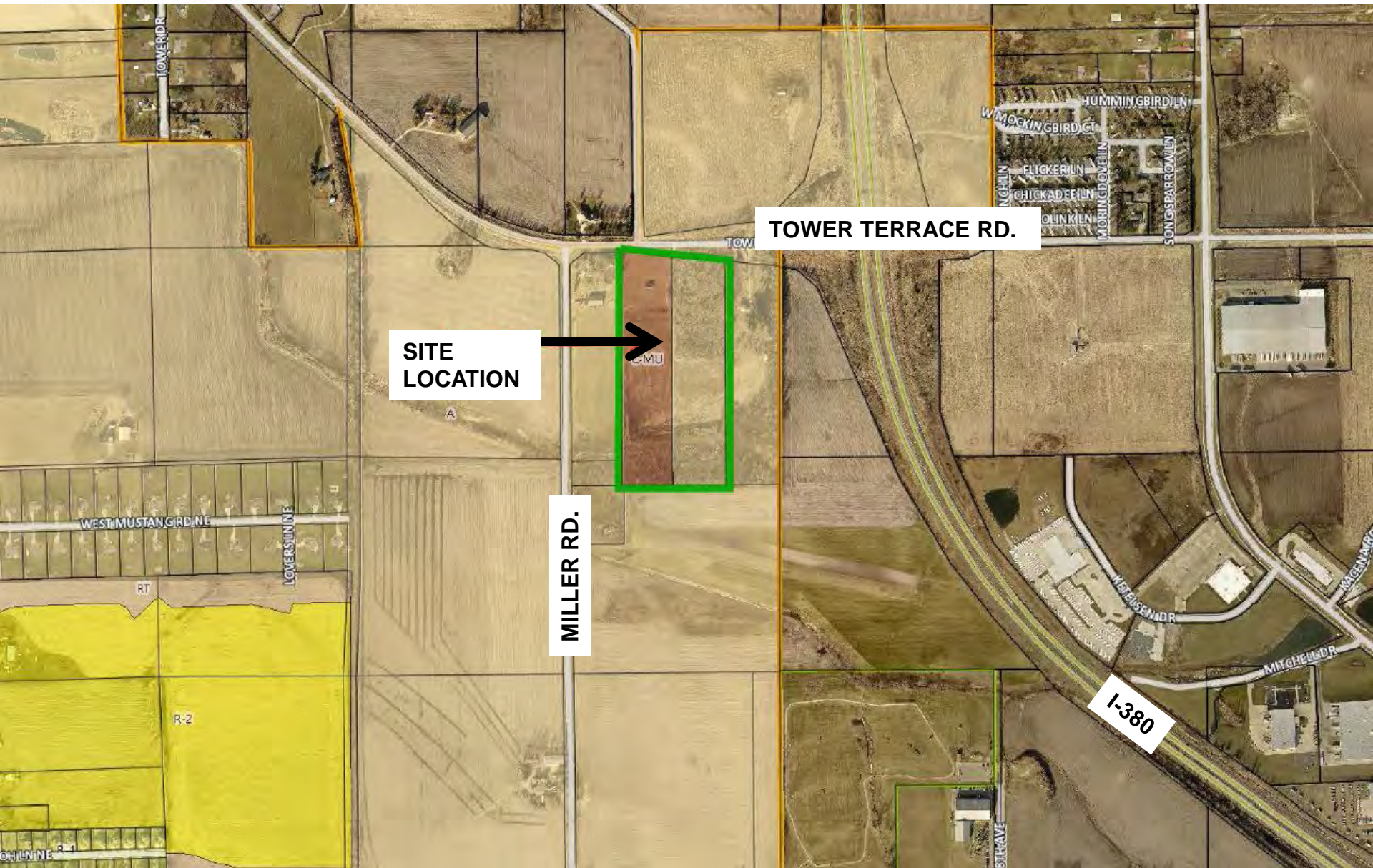
4625 & 4497 Tower Terrace Rd. NE



GENERAL INFORMATION:

- Request to rezone parcels from C-MU & A Zone Districts to C-3, Regional Commercial Zone District.
- Conditional Use approval for “outdoor amusement” granted by Board of Adjustment.
- Proposed 22 outdoor volleyball courts.
- “Urban Medium Intensity” on Future Land Use Map in Comprehensive Plan.
- City Planning Commission unanimously recommended approval.
- Project Details:
 - Total site area – 20.96 acres
 - Proposed aggregate building size – 82,250 s.f.
 - Proposed outdoor amusement area – 148,050 s.f. (22 courts)
 - Total parking required – 200 spaces
 - Total parking provided – 220 spaces
 - Storm water management provided on-site-detention basin & sub-drains under volleyball courts.

Zoning



Existing Development

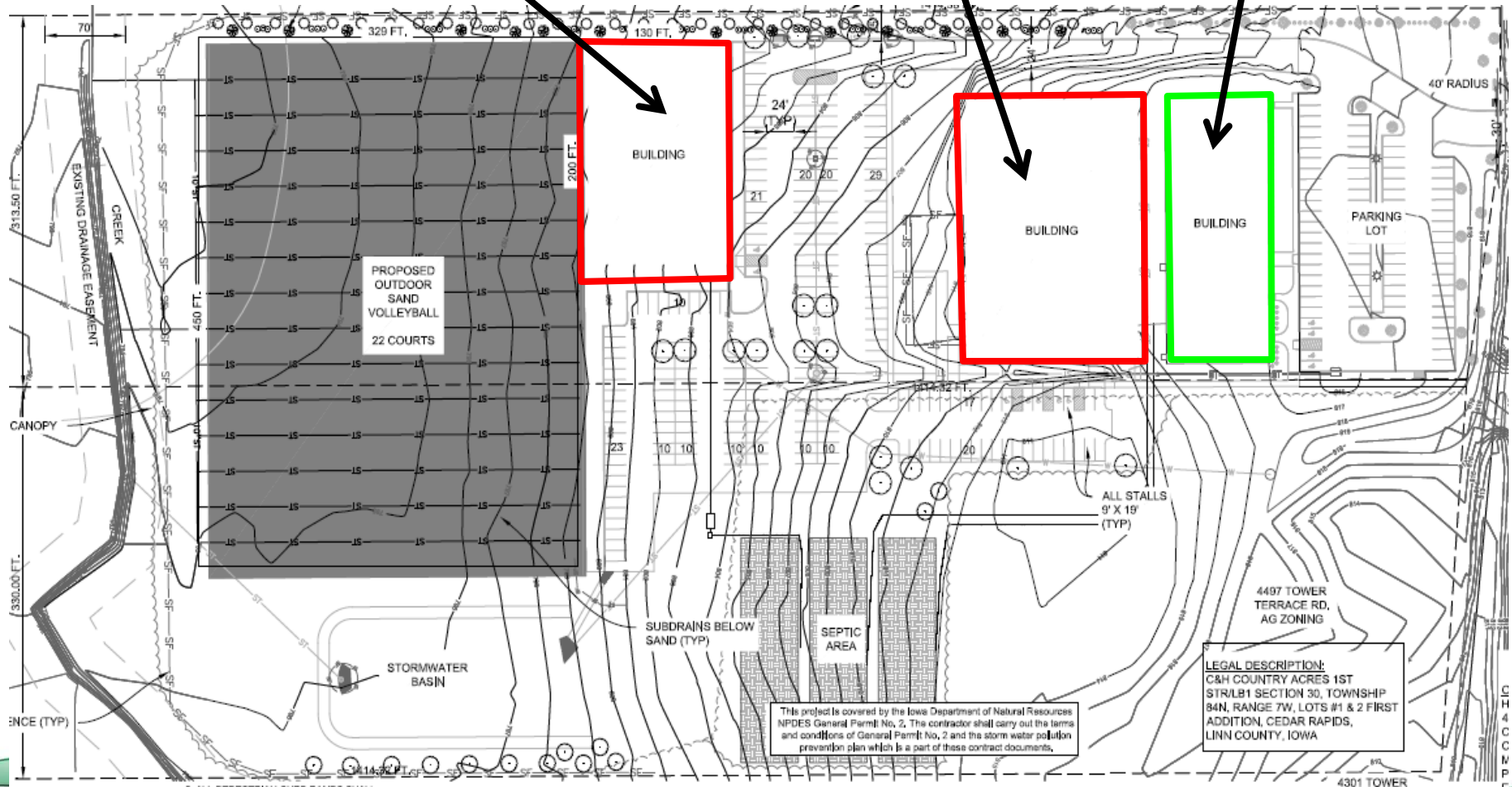


Site Development Plan

**Proposed Indoor
Volleyball**

**Proposed Indoor
Soccer**

**Existing Twisters
Gymnastics**



Next Steps

- December 06, 2016 - City Council 2nd & possible 3rd Readings of Ordinance
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**5 FOOT RECREATIONAL EASEMENT VACATION
AND UTILITY EASEMENT VACATION
1201 BLAIRS FERRY ROAD NE**



0 FEET 200