



Planning Commission/Zoning Board of Appeals

Agenda

January 16, 2019

7:00 P.M. Sugar Grove Public Library, 125 S Municipal Drive

I. CALL TO ORDER

II. ROLL CALL

III. APPROVAL OF MINUTES

- a) November 28, 2018

IV. PUBLIC HEARING

- a) Petition #18-010 Rezoning Property Located North and South of I-88 and Assignment of Zoning on Newly Annexed Property
Applicant: Crown Community Development

V. NEW BUSINESS

- a) Petition #18-010 Rezoning Property Located North and South of I-88 and Assignment of Zoning on Newly Annexed Property
Applicant: Crown Community Development
- b) Petition #18-010 Subdivision Ordinance Variations
Applicant: Crown Community Development

VI. OLD BUSINESS

None

VII. COMMISSIONER COMMENTS AND MISCELLANEOUS INFORMATION

- a) Next Meeting February 20, 2019

VIII. ADJOURNMENT

Public Hearing
Exhibit A

**VILLAGE of SUGAR GROVE
PLANNING COMMISSION/ZONING BOARD of APPEALS
MINUTES of November 28, 2018 SPECIAL MEETING**

1. CALL TO ORDER

The meeting of the Sugar Grove Planning Commission/Zoning Board of Appeals was called to order at 7:00 p.m. by Chairman Ochsenschlager in the Board Chambers of the Village of Sugar Grove Municipal Center.

2. ROLL CALL

Planning Commission/Zoning Board of Appeals members present:

Irv Ochsenschlager, Larry Jones, James White, James Eckert, and
Rebecca Sabo

Absent: John Guddendorf and Greg Wilson

Also present: Renee Hanlon, Planning & Zoning Administrator

3. APPROVAL OF MINUTES

Commissioner White moved to approve Minutes of the September 19, 2018 Meeting of the Planning Commission/Zoning Board of Appeals. Commissioner Eckert provided the second.

Motion passed by unanimous voice vote.

4. PUBLIC HEARING:

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| Petition #18-019 Special Use and Variation for Accessory Structure at 25 S Municipal Drive Applicant: Sugar Grove Fire Protection District |
|---|

Chairman Ochsenschlager called the public hearing to order at 7:02 p.m. Witnesses were sworn in by the Chairman.

Administrator Hanlon provided a brief description of the request and the proposed training facility.

Assistant Chief Wayne Parson explained the need for the training facility at this location. He explained that until the SGFPD builds such a training facility they will not meet their training goals.

Members of the public present (see attached sign in sheet) posed questions and comments focused on the following issues:

- The appearance of the proposed structure. Objectors feel that the facility will be an eyesore in their neighborhood and asked if a more compatible structure could be built.
- The noise that will be generated by the training operation. There was concern over the hours of operation and how many other fire departments may be using the facility.
- Potential other locations were discussed. Other locations suggested are: Denny Road SGFPD site, Waubensee Community College, and the Aurora Airport.
- The need for this facility versus paying overtime to firefighters to train off site.
- The impact this facility will have on neighboring property values.

Fire Chief William Perkins provided the following testimony in answer to questions from the public:

- The shipping container construction provides the most cost effective way to build the training facility. He stated that he and his staff will speak to the supplier about enhancements to the facility to improve the appearance and enhance the compatibility with the residential neighborhood.
- The noise level will not be much different than the current noise level at the fire station. Currently training exercises occur regularly. He assured the public that they will not be banging on the sides of the containers and will be sensitive to noise concerns. He further stated that limiting the hours of operation would be an acceptable condition placed on the Special Use.
- The Denny Road site is too expensive to develop for the purpose of establishing this training facility. Any offsite location creates the same problem that the department is currently experiencing; if firefighters receive a call for service while training, they must return to the fire station to pack equipment before responding to the emergency. This slows response time throughout the jurisdiction.
- The cost of overtime pay is not the biggest issue with having off duty firefighters train offsite. Training occurs in groups; therefore, many firefighters have to be scheduled for the same time. Many firefighters are employed part time with SGFPD and are not available during off duty hours, because they work second jobs. If the training facility is located onsite these firefighters may train while on duty.
- There may be an impact to insurance rates throughout the Village if the facility is not allowed. Currently, SGFPD receives no points for training on their annual ISO (Insurance Service Office) assessment. This ISO rating impacts insurance rates in the community.
- Chief Perkins closed by stating that this training facility is not about meeting the minimum training standards, but exceeding training minimums and providing the opportunity for the firefighters to take their training to the next level.

Commissioner White reiterated the need to establish hours of operation and asked the SGFPD to look at ways to enhance the façade of the training structure in order to make it more aesthetically pleasing.

Commissioner Sabo asked if the structure will be damaged during training exercises creating a need to constantly be rebuilding the structure. Chief Perkins assured her that the training exercises will not result in a need to undertake major repairs.

Commissioner Eckert shared the following concerns which Chief Perkins addressed:

- Smoke damage of the exterior as a result of training. Chief Perkins testified that no flames will be created that would cause damage. Smudge pots will be the only live fire and do not produce flames.
- Water usage during training that may create flooding issues. Chief Perkins explained that very little water is used during the exercises.
- Hazardous materials used during training causing damage to wetlands from runoff. Chief Perkins states that no hazardous materials are used during training exercises.
- The creation of traffic hazards along US Hwy 30 from smoke billowing out of structure. Chief Perkins explained that other area facilities are located on busy streets and he has not heard of a problem in those towns.

Commissioner Jones asked if the SGFPD would explore the offsite locations that some members of the public suggested. Chief Perkins agreed to explore those possibilities.

Chairman Ochsenschlager closed the public hearing at 8:37p.m.

5. **NEW BUSINESS:**

Petition #18-019 Special Use and Variation for Accessory Structure at 25 S Municipal Drive
Applicant: Sugar Grove Fire Protection District

Commissioners discussed the request for special use. Commissioner White asked Chief Perkins if he was willing to come back to the Planning Commission with plans for architectural enhancements to the building. Commissioner White suggested that the item be tabled and revisited at the next scheduled meeting.

Chairman Ochsenschlager asked Chief Perkins if he understood the additional information being requested of him. Chief Perkins responded that he did understand.

Commissioner White moved to table Petition #18-019 until the next meeting on December 19, 2018. Commissioner Sabo provided the second.

Motion passed by unanimous voice vote

Commissioner White left the meeting at 9:05.

Item: County of Kane Petition for Landscape Compost Operation and Mining within Planning Jurisdiction
Applicant: Creekside Farms, LLC

Administrator Hanlon explained that this project will be zoned under the jurisdiction of Kane County. Since this property falls within one and one-half miles of the corporate limits of the Village of Sugar Grove, the Village has the right to comment on the zoning application. Ms. Hanlon provided an overview of the zoning request.

Commissioners discussed the proposal and concluded that the operation will not have an impact on the Village of Sugar Grove Land Use Plan.

6. **OLD BUSINESS:**

None

PLAN COMMISSIONER COMMENTS, PROJECTS UPDATES and MISCELLANEOUS INFORMATION

Administrator Hanlon provided an update on development projects that will be coming before the Planning Commission.

Commissioners discussed the status of different construction projects throughout the village.

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Planning Commission/Zoning Board of Appeals
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7. ADJOURNMENT

Commissioner Jones moved, Commissioner Eckert seconded, to adjourn.

The motion passed by unanimous voice vote.

The meeting was adjourned at 9:20 p.m.

Respectfully submitted,
Renee Hanlon
Recording Secretary

VILLAGE PRESIDENT

P. Sean Michels

VILLAGE ADMINISTRATOR

Brent M. Eichelberger

VILLAGE CLERK

Cynthia Galbreath



COMMUNITY DEVELOPMENT DEPARTMENT

VILLAGE TRUSTEES

Sean Herron
Mari Johnson
Ted Koch
Heidi Lendi
Rick Montalto
David Paluch

A D V I S O R Y R E P O R T

TO: Planning Commission/Zoning Board of Appeals
FROM: Walter Madgziarz, Community Development Director
Renee Hanlon, Planning and Zoning Administrator
DATE: January 04, 2019
PETITION: 18-010

GENERAL INFORMATION

HEARING DATE: January 16, 2019
PROJECT NAME: Crown Planned Development District (PD District)
PETITIONER: Crown Community Development

PROPOSAL

The petitioner is seeking a map amendment from E-1 Estate Residential to PD Planned Development District and the assignment of PD Planned Development District zoning classification on newly annexed property. The proposed PD district will allow for a mix of uses on the property including: detached single-family residential, multi-family residential, office, commercial, manufacturing, and warehouse.

The property is approximately 760 acres and is located at the intersection of I-88 and Sugar Grove Parkway (IL 47). The property extends north and south of I-88. The development plan proposes a multi-year build out of the property with the first site preparation beginning in the spring of 2019.

The purpose of this zoning map amendment request is to establish the Planned Development District. The petitioner is not submitting detailed site plans for approval at this time. As each phase of the project is developed, subdivision plats and specific building plans will be prepared for further review and approval by the Planning Commission and the Village Board.

LOCATION MAP



EXISTING ZONING

Subject Property: E-1 Estate Residential and F Farming (Kane County)

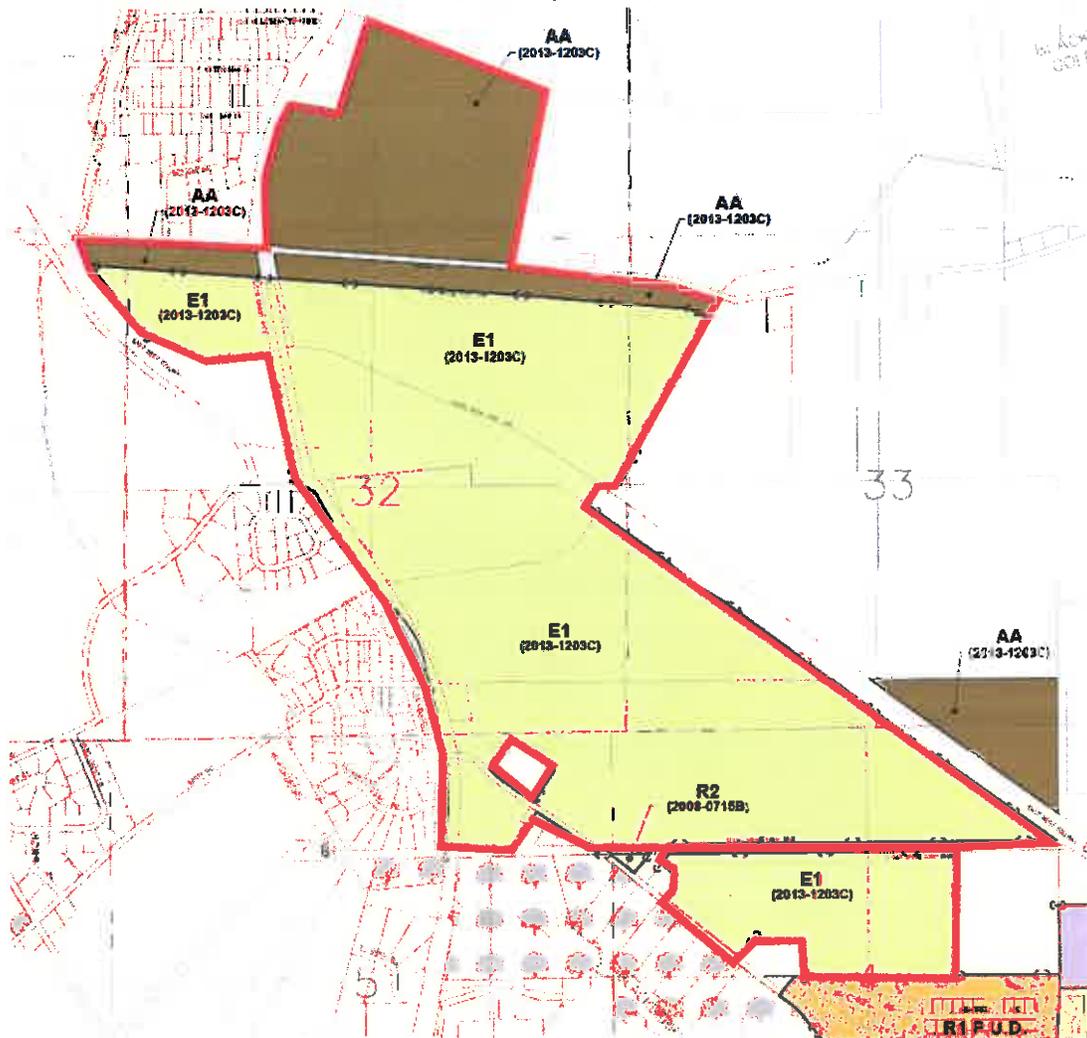
North: Unincorporated

South: R-1 PUD (Hannaford Farm Subdivision)

East: Unincorporated F Farming (Kane County)

West: Unincorporated F Farming (Kane County) R-1 (Kane County) Forest Preserve

(See Map Below)



FUTURE LAND USE PLAN

Subject Property: Single-Family Residential, Business Park and Open Space

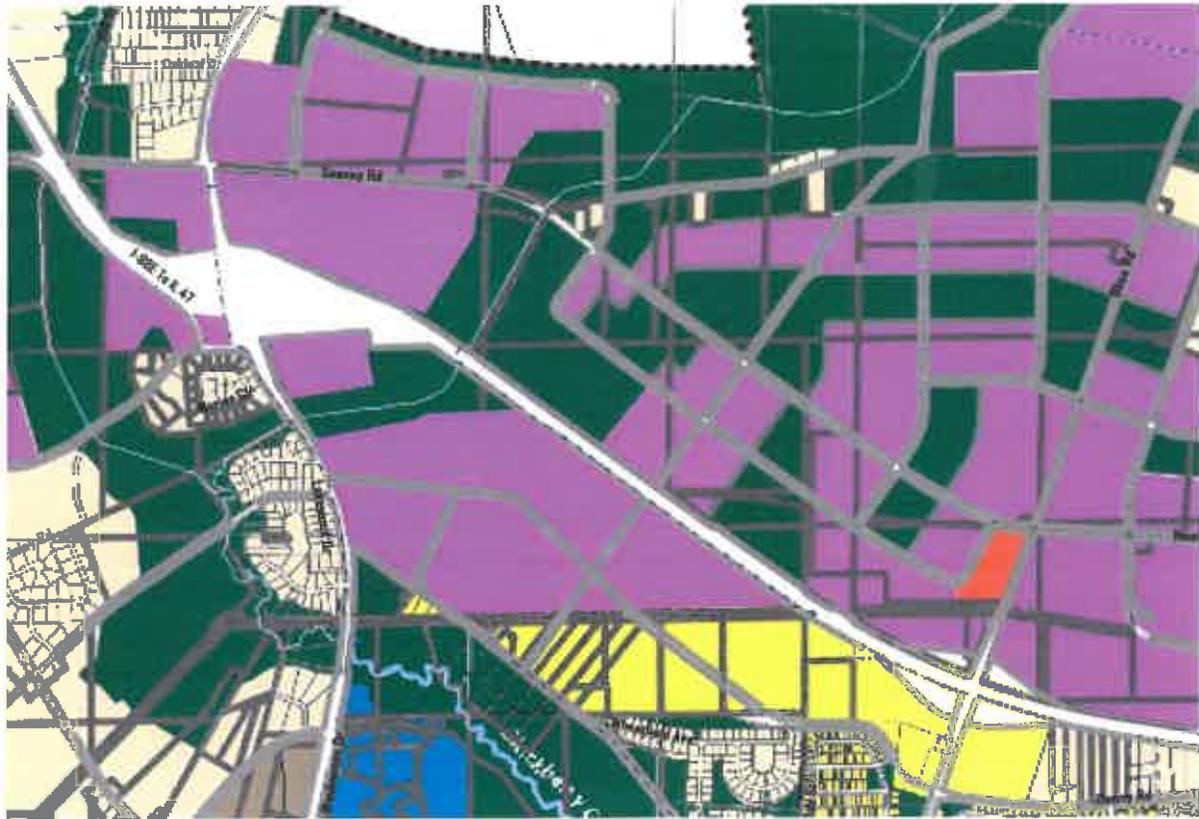
North: Estate Residential and Planning Boundary

South: Estate Residential and Open Space

East: Open Space and Business Park

West: Estate Residential and Open Space

(See Map Below)



| | |
|---------------------------|--------------------------|
| Planning Area Boundary | Neighborhood Commercial |
| Village Limits | Public/Semi-Public |
| Estate Residential | Airport |
| Open Space | Multi-Family Residential |
| Single-Family Residential | |
| Business Park | |
| Corridor Commercial | |
| Town Center Commercial | |

BACKGROUND & HISTORY

The property is in active agricultural production. There is an environmental corridor along the Seavey Road Run which crosses the property south of the Tollway and along the far west end of the property where Seavey Road crosses Blackberry Creek. The environmental corridors are highly regulated by other agencies and are largely free of encroachment by the proposed development. There are abandoned farm related structures on the Property. These abandoned structures will be demolished prior to development of the property.

The majority of this property was annexed to the Village in 2013 pursuant to an annexation agreement (Ordinance 2013-1203C). The northern most portion of this property was included in the 2013 annexation agreement but was not annexed at that time. The annexed portion of the property was assigned E-1 Estate Residential zoning upon annexation. The annexation agreement never contemplated development of the property as estate residential. The E-1 zoning classification is the most restrictive zoning classification and is used as the default zoning classification until the intended use of property is determined. The annexation agreement is being amended for a number of reasons, including incorporating the requested PD District.

When the property was annexed the anticipated land uses were considerably different than those being proposed today. Market realities and community expectations for development in the vicinity of the Tollway interchange and along the Tollway frontage have changed considerably since the property was annexed. What has not changed is the Village's desire to exploit the complete full access interchange for economic development purposes.

The petitioner is seeking to rezone the E-1 zoned portion of the property to PD District and to assign PD zoning classification to the newly annexed northern portion of the property. All of the annexed acres will be included in the requested PD District.

Planned Development District zoning was added to the Village Zoning Ordinance in 2005. The purpose of this district is to allow flexibility of land use and development standards beyond those provided through traditional Planned Unit Development (PUD) zoning. The PD District is not synonymous with a Planned Unit Development. It is effectively a custom designed zoning district that will have its own unique regulations pertaining to: permitted uses, accessory structures, landscaping, bulk regulations, lot development standards, parking regulations, etc. The Crown PD District may have similarities with existing zoning districts, but in reality is a standalone zoning district. The Village zoning regulations do not adequately address the physical and operational needs and requirements of contemporary high cubic volume manufacturing and warehouse spaces; therefore, applying the Crown PD District approach to this project is appropriate. Moreover, there are land uses permitted in various zoning districts that the Village considers undesirable on this Property and the PD District approach allows the Village to cherry-pick permitted uses for the Property.

Planned Development District zoning is available only for unified developments consisting of at least

two hundred (200) acres and containing at least two (2) principal uses. This project meets these requirements in that it consists of over seven hundred (700) acres and includes the following contemplated uses: detached single-family residential, multi-family residential, office, warehouse distribution, manufacturing, retail, and travel-related uses, such as hotels, fuel stations, and restaurants.

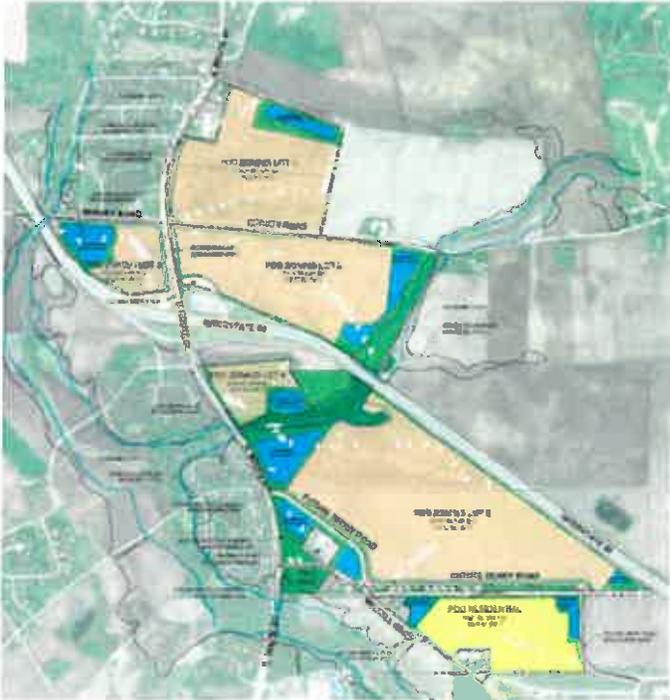
The difference between traditional PUD zoning and PD District zoning is that there is no underlying zoning designation assigned to property within a PD District. In other words, a PD District has no relevance to zoning districts established by the Village Zoning Ordinance. For this reason, all land uses and development standards must be specified within the PD District establishing ordinance. The PD District under consideration is proposed as follows.

EVALUATION

Since the Crown PD District is a custom designed zoning district, a brief explanation of the proposed regulations is in order. To help Commissioners understand the proposed district regulations, a comparison of the proposal with similar zoning districts in the Village is provided below. With a few exceptions, the proposed district regulations are equal to or more restrictive than current similar zoning regulations.

Regulating Plan

A distinguishing feature of the Crown PD District is the *Regulating Plan*. This document delineates the location of various general land uses on the property and the location of the six Zoning Lots that form the basis of the Crown PD District regulations (full plan is attached at the end of this document)



Detached Single-Family Residential Uses

The proposed detached single-family residential requirements of the project most closely align with the standards established for R-2 zoning by the Village Zoning Ordinance. This property WILL NOT be assigned the R-2 zoning designation; however, the standards of R-2 zoning are a good comparison to aid in understanding the unique development standards being proposed for the Crown PD District. Bear in mind, these regulations apply only to Zoning Lot 6 in the Regulating Plan. The following table compares the standards for the PD District with the R-2 zoning. District. The items in red are variations or departures from the representative zoning district standards.

| | R-2 Zoning | Zoning Lot 6 |
|--------------------|--|--|
| Lot Size | 10,000 square feet | 10,000 square feet |
| Lot Width | 75' | 75'(65% of lots) 85' remainder |
| Lot Depth | No standard | 134 feet |
| Minimum Floor Area | 1 story = 1,200 square feet 2 story = 1,000 square feet | 1 story = 1,800 square feet 2 story = 2,200 square feet |
| Lot Coverage | 45% | 45% |
| Street Setback | 30 feet | 25 feet |
| Interior Setback | 10 feet | 9 feet |
| Rear Setback | 30 feet | 30 feet |

The Village Zoning Ordinance does not establish architectural standards for single-family residential buildings. The Village has established architectural standards for many single-family subdivisions through the PUD process. The following table compares the standards established by the Hannaford Farm and Prairie Glen neighborhoods to the proposed architectural standards for the detached single-family buildings within the Crown PD District. The comparison is provided only for information purposes.

| | Hannaford Farm | Prairie Glen | Zoning Lot 6 |
|----------------------------------|-----------------------|---------------------|--------------------------------|
| Lot Development Standards | | | |
| Lot Size | 15,000 square feet | 10,300 square feet | 10,000 square feet |
| Lot Width | 100 feet | 85 feet | 75'(65% of lots) 85' remainder |
| Minimum Floor | 1 story = 2,200 sf | 1 story = 1,800 sf | 1 story = 1,800 square feet |

| | | | |
|------------------|--------------------|--------------------|-----------------------------|
| Area | 2 story = 2,700 sf | 2 story = 2,200 sf | 2 story = 2,200 square feet |
| Street Setback | 30 | 30 | 25 |
| Interior Setback | 10 | 10 | 9 |

| Architectural Standards | Hannaford Farm | Prairie Glen | Zoning Lot 6 |
|--------------------------------|---|--|--|
| Maximum horizontal expanse | | Generally, front and rear facades. No more than 40' without 4' offset on front and 2' offset on rear | Generally, street façade and façade that fronts common open space. No more than 40' without a 4' offset on front facades and rear facades facing open space. No more than 40' without a 2' offset on side facades facing open space |
| Garage | Side load garage is first choice. Setback front load garage beyond living space 2 car front load garage at least a 2' offset and shall not exceed 50% of the elevation. Decorative door required. | Minimum 2 car | Decorative doors required. Front load garage shall be setback no closer to the street than the entry feature. Third bay must be offset by at least 2'. No front load garage shall exceed 60% of the elevation. |
| Wall materials | No aluminum or vinyl | Natural wood, natural or cultured stone, brick, stucco, high quality aluminum or vinyl no less than .0423" gauge. EFIS as an accent only. 57 homes must have at least 130 sf of brick or stone on the front elevation. | Cement board, full face brick, natural or cultured stone, horizontal wood, wood shakes, stucco. EFIS as an accent only. Forty percent (40%) of the homes shall include masonry as an exterior wall material. The required masonry materials shall be install on the front façade as a wainscot or a gable feature. |
| Chimneys | Prefab fireplace chases must pass through the roof. Chases are not | | Direct vent chase may be installed on the exterior of the building; however, the chase shall extend at |

| | | | |
|--------------------------------|--|--|---|
| | allowed on the exterior wall. | | least 3' above the eave and shall be located no more than 8" from the ground. |
| Architectural Standards | Hannaford Farm | Prairie Glen | Zoning Lot 6 |
| Trim | Four inch (4") trim boards on windows and trim on all elevations with the exception of masonry transitions | Trim amenities are required on front and some rear facades. Amenities include: window trim boards, shutters, frieze and band boards, corner trim and other molded millwork, window grills. | Four inch (4") trim on door and window openings, 4" corner boards on all corners, 6" frieze and band boards required on street and common area facing facades. |
| Roof Materials | Wood, slate, or 30 year architectural shingles | Wood shake, architectural, or metal standing seam. No tile. | Architectural, standing seam metal, cedar shake, or slate |
| Windows | <i>(none)</i> | Openings shall be no more square than square, no more vertical than triple square | Vertical and horizontal muntins required on street and common area facing facades. |
| Monotony | Same exterior elevation shall not be utilized on lots next to, across from or diagonal each other which front on the same street | <i>(none)</i> | The same exterior elevation shall not be utilized on lots next to, across the street from or diagonal each other on the same street frontage. The same elevation shall be separated by a minimum of two buildings whether on the same or opposing block face. |
| Primary Entrance | <i>(none)</i> | <i>(none)</i> | The primary entrance shall be located on a street façade. The entrance shall be covered for a depth of at least 4' unless otherwise approved by the Director of Community Development. |

| | | | |
|--|--|--|--|
| | | | Posts shall support the covered entry and shall match the building style. The covered entry shall be accessible by at least 1 riser. |
|--|--|--|--|

Please see *PDD Exhibit C Lot Development and Architectural Standards Astoria of Sugar Grove* (attached) for a complete list of the lot development standards.

The way in which the proposed Crown PD District is structured means, in the case of Zoning Lot 6, that a residential builder who submits building plans that meet the standards included in the above referenced document will be issued a building permit without additional review by the Planning Commission or the Village Board. In other words, the standards listed will be enforced administratively by Village staff through the building permit process.

Industrial, Office, Commercial, and Multi-family Uses

The vast majority of the property is planned to accommodate the development of industrial, office, and commercial uses. These uses may be located on Zoning Lots 1 thru 5, inclusive, as depicted on the Regulating Plan. There is no requirement that commercial or multi-family uses must be developed on the property, but if they are they may be located only in the areas shown on the Regulating Plan.

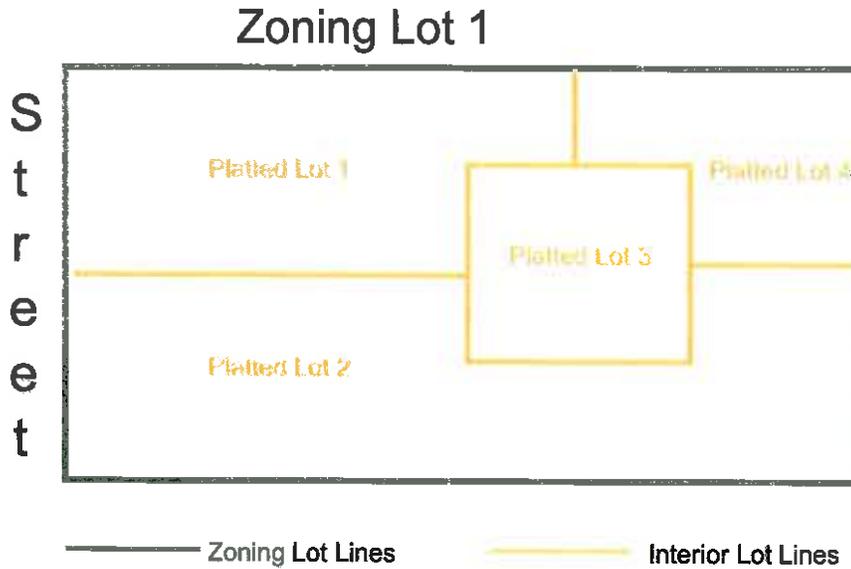
The proposed Crown PD District ordinance will allow for one (1) multi-family development on the property. The multi-family development may be located on any Zoning Lot as depicted on the Regulating Plan. If provided, the multi-family development shall not exceed three hundred (300) dwelling units and must provide substantial amenities for residents.

There are no building or site improvement plans being offered for approval at this time; therefore, each future building project will come before the Planning Commission and Village Board for final plan review. The PD District ordinance will include guidelines to help the Planning Commission and Village Board review these future building plans. These proposed guidelines are attached and entitled *Exhibit D Crossroads Corporate Center of Sugar Grove Lot Development and Architectural Design Guidelines*.

Unlike *Exhibit C Astoria of Sugar Grove Lot Development and Architectural Design Standards*, the above referenced document sets expectations for the future development, but does not establish building standards. Even if all the items covered by this document are satisfied, the Village Board may still deny approval of the project. Likewise, the Village Board may approve a project which does not meet every item covered by this document.

Another unique feature of this PD District is the way in which setbacks will be determined. The PD District is divided into six (6) "zoning lots." As the PD District is built out, these zoning lots will be

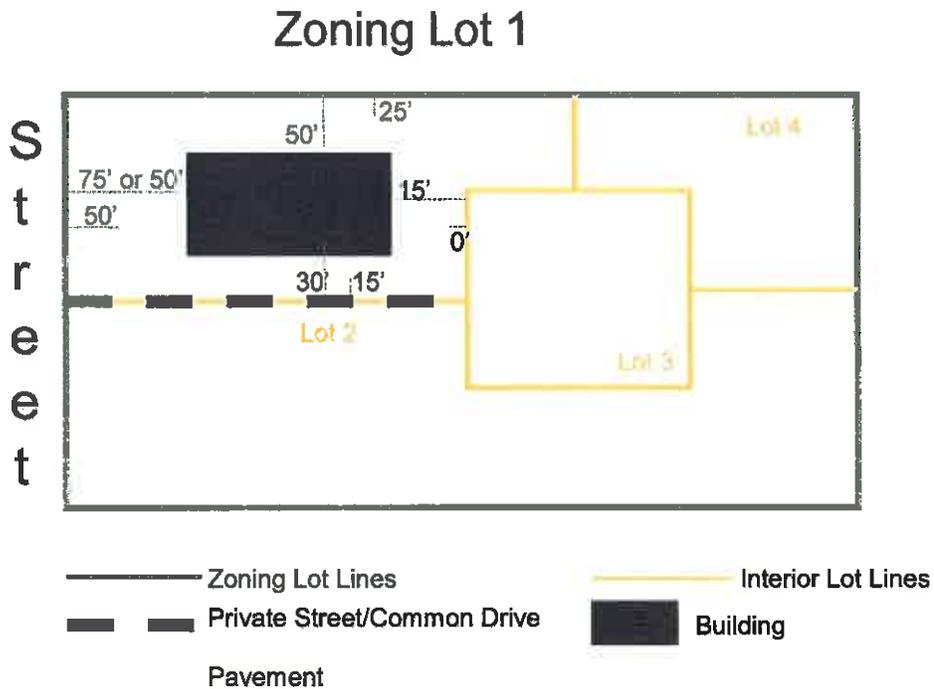
further subdivided into interior or (platted) building lots. There are zoning lot line setbacks and interior lot line setbacks that apply to the development of the property. Below is an illustration to help understand the difference between a zoning lot line and an interior lot line.



In order to best illustrate these guidelines, the following table compares elements of the PD District guidelines to the standards for BP Business Park zoning district. Please be reminded that this property WILL NOT be assigned BP zoning classification as an underlying zoning designation; however, the PD District ordinance will apply the standards of the BP district wherever the establishing ordinance is silent. The reason that BP zoning classification is an appropriate comparison is that the subject property is designated *Business Park* in the Village Comprehensive Plan.

| | BP Business Park District | Zoning Lots 1 thru 5 |
|--|----------------------------------|---|
| Lot Size | 87,120 square feet | 40,000 square feet |
| Lot Width | 200 feet | 100 feet |
| Lot Coverage | 70 percent | 70 percent (commercial/multifamily) 90 percent (industrial) |
| <u>Building Setbacks</u> | | |
| Zoning Lot Setbacks: | | |
| Street Lot Line (except Denny Road and I-88) | 50 feet | 75 feet |
| Street Lot Line of Denny Road and I-88 | 50 feet | 50 feet |
| Other Lot Line | 75 feet | 50 feet |
| Interior Lot Setbacks: | | |
| Street Lot Line (this setback applies to private streets or common drives) | 50 feet | 30 feet |
| Other Lot Line | 25 feet | 15 feet |
| <u>Pavement Setbacks</u> | | |
| Zoning Lot Setbacks: | | |
| Street Lot Line (South of I-88) | 45 feet | 50 feet |
| Street Lot Line (North of I-88) | 45 feet | 35 feet |
| I-88 Lot Line | 45 feet | 35 feet |
| Other Lot Lines | 25 feet | 25 feet |
| Interior Lot Setbacks: | | |
| Street Lot Line (this setback applies to private streets or common drives) | 25 feet | 15 feet |
| Other Lot Lines | 0 feet | 0 feet |

The following illustration indicates how each of the required setbacks will be applied to the property.



Landscaping

The following table compares the landscape standards of the BP District to the landscape guidelines of the proposed PD District.

| | BP District | Zoning Lots 1 thru 5 |
|--|--|--|
| Zoning Lot Setback Areas: | | |
| Street Lot Line | Earthen berm + 1 evergreen tree, 1 shade tree, 1 ornamental tree, and 12 shrubs per 50 feet. | Earthen berm 4 feet in height + 1 evergreen tree, 1 shade tree, 1 ornamental tree, and 12 shrubs per 100 feet . No shrubs required along I88 |
| Other Lot Lines | 1 tree and 6 shrubs per 50 feet | 1 tree and 6 shrubs per 50 feet |
| Interior Lot Setback Areas: | | |
| Street Lot Line (this includes private streets and common drives) | 1 evergreen, 1 shade tree and 6 shrubs per 50 feet | 1 tree and 6 shrubs per 50 feet |
| Other lot lines | No landscape required | No landscape required |

| | BP District | Zoning Lots 1 thru 5 |
|--------------------------------------|--|---|
| Building Foundation Plantings | 1 tree and six shrubs per 20 feet in an 8 foot wide planting bed | 5 columnar evergreen trees and fifteen shrubs per 100 feet in a 5 foot wide planting bed along industrial and multifamily buildings. Six shrubs or perennial grasses per 20 feet + perennial flowering plants in an 8 foot wide planting bed along commercial buildings. |

Architecture

The following table compares additional items from the PD District design guidelines which are also addressed in the Village Zoning Ordinance. Please be advised that additional architectural items are included in the design guidelines which are not addressed in the Village Zoning Ordinance.

| | BP District | Zoning Lots 1 thru 5 |
|---|--|---|
| Building Height | 50 feet where building is located at least 150 feet from residential uses and 35 feet where building is located less than 150 feet from residential uses. | Warehouse/Distribution = 60 feet Multifamily Residential = 50 feet All other uses = 50 feet where building is located at least 150 feet from residential uses and 35 feet where building is located less than 150 feet from residential uses |
| Off Street Parking Count All uses not listed shall comply with the Village of Sugar Grove Zoning Ordinance requirement. | Multifamily = 2 per dwelling Restaurant = 13 per 1000 square feet of floor area + 8 stacking for drive through window Office = 5 per 1000 square feet of floor area Warehousing = 1 per 2000 square feet of floor area OR 1 per 1.25 employees whichever is | Multifamily = 1.5 per dwelling Restaurant = 10 per 1000 square feet of floor area + 8 stacking for drive through window Office = 3 per 1000 square feet of floor area Warehousing = 1 per employee at peak shift and 10 visitor spaces |

| | | |
|------------------------------------|--|--|
| | greater | |
| | BP District | Zoning Lots 1 thru 5 |
| Pedestrian Circulation | Parking spaces shall be separated from any building by an unobstructed pedestrian walkway measuring at least 8 feet wide | Parking lots adjacent to the office area of industrial buildings shall be constructed with a minimum 5' sidewalk. Parking lots adjacent to commercial buildings shall be constructed with a minimum 8' raised sidewalk. |
| Bicycle Facilities | Bicycle parking spaces shall be provided at a rate of 5% of the total number of vehicle parking spaces | On industrial lots, bicycle parking spaces shall be provided at a rate of 1% of the total number of vehicle parking spaces |
| Fencing | Fences may be constructed in the street yard at a height of 3' and excluding chain link in the street yard Fences in all other yards may be 8' in height Barbed wire is expressly prohibited | No fences permitted in the street yard with the exception of I-88 street yard. Fences in I-88 street yard may be 8' in height and may be black chain link All other yards: Commercial and multifamily lots fences 6 feet maximum height. Industrial lots fences 8 feet maximum height. |
| Wall signs | Wall sign surface area shall not exceed 1 square foot per 1 linear foot of building width or 200 square feet whichever is less | Wall sign surface area on buildings of 10 or more stories which are parallel with I-88 shall not exceed 20% of the façade square foot or 300 square feet whichever is less |
| Freestanding Signs | One (1) monument style freestanding sign per 150' of frontage. Signs shall be limited to 10' in height and 12' in width. | One (1) monument style freestanding sign per 150' of frontage. Signs shall be limited to 10' in height and 12' in width. |
| Permanent Development Signs | Master sign plan required | See master sign plan |

Open Space and Tree Preservation

Section 11-16-2-1 (A) 1 of the Village of Sugar Grove Zoning Ordinance provides the following.

“Unless otherwise reviewed by the planning commission/zoning board of appeals and approved by the village board, not less than forty percent (40%) of the land within a planned development district shall be reserved and designated as open space, greenbelt and/or recreational facilities.”

As proposed, this PDD falls below the minimum forty percent (40%) open space requirement. According to the PDD Summary table submitted by the petitioner, a total open space percentage of 27.2 is being proposed. The percentage of the property devoted to each open space category breaks down as follows:

| Site total | Stormwater | Greenspace (includes required landscape setbacks) | Park | Total Open Space |
|------------|------------------|---|-------------------|-------------------|
| 760.56 Ac | 61.43 Ac (8%) | 143.31 Ac (18.8%) | 2.29 Ac (< 1%) | 207.03 (27.2%) |

Note: Roadways will account for an additional 31.04 Acres (4.08%)

The petitioner does plan to provide 31.9% open space within the residential area of the property. This open space will be both public and private open space. The area of the property devoted to single-family residential will consist of 98.61 acres and of that, 31.48 acres will be devoted to open space purposes.

The petitioner proposes to construct an extension to the current path system as an offset to the variation from the required forty percent (40%) open space set aside. By extending the path system, the petitioner is providing active open space. Please see the attached *Preliminary Landscape Plan* for details of the proposed path system.

Beyond the path system, the petitioner is setting aside a forested area south of Merrill Road. This area is approximately ten (10) acres. As proposed, the new Merrill Road will bisect this area and a water tower may be located on the property. The petitioner is planning the path system to dip through the area to create an active recreation trail on the parcel.

Seavey Road Run, a tributary of Blackberry Creek, traverses the property along the east edge of Zoning Lot 2 and between Zoning Lots 4 and 5. This area will be largely untouched by development activity due to the environmental sensitivity of the area. The area falls within the floodplain.

There are many mature trees on this property which will not be protected by the proposed PD District Ordinance. In exchange for the elimination of these forested areas, the petitioner has

agreed to offset tree removal by donating money to fund the planting of trees throughout the Village per the annexation agreement amendment.

Lastly, there is no plan for permanently preserved open space on property north of I-88 outside of the required landscape setback area, stormwater management areas, and a ten foot (10') wide path along Seavey Road.

Traffic Impact

Attached is a Traffic Impact Study prepared by Kimley-Horn. The traffic study describes the roadway improvements planned for the southern portion of the planned development. Denny Road currently terminates east of this property. The petitioner is proposing to extend Denny Road through the property to provide both a local east/west connection between Norris Road and Sugar Grove Parkway south of the Tollway in accordance with the Village Comprehensive Plan and Transportation Plan and to provide access to future industrial lots planned immediately south of I-88. The planned roadway network will also require the realignment of the western most portion of Merrill Road. Merrill Road will be reconfigured to align directly opposite Thornapple Tree Road. The petitioner intends to complete these roadway improvements as part of the initial phase of the project.

The circulation network being proposed accomplishes several mutual objectives: (1) provide two access points to IL 47; (2) provide for continuation of Denny Road to IL 47 from its current termination point at Red Bud Land and (3) discourage unwanted business park traffic from Bliss Road and existing Merrill Road.

The traffic study provides information about additional roadway improvements based on anticipated traffic volumes generated by this project. Please be reminded that the assumptions of this traffic study are based on the maximum use of the property according to the petitioner. It should be understood, however, that without a commitment from the developer to the density and exact uses developed on the property, any conclusion drawn from this study is speculative. As each parcel develops, a traffic impact study will be required.

No formal application has been submitted to the Illinois Department of Transportation (IDOT) for access to IL 47 at the proposed locations. The proposed access points are reflective of best practices, conversations the petitioner has had with IDOT officials concerning the proposed development and IL 47 access, and of the direction given by IDOT officials.

STANDARDS FOR REZONING

When considering map amendment requests, the Zoning Ordinance provides standards to be considered. Each standard is addressed below.

1. *Will this rezoning change promote the public health, safety, comfort, convenience and general welfare of the village and comply with the policies of the comprehensive land use plan and other plans adopted by the village?*

This rezoning complies with the Village of Sugar Grove Comprehensive Plan. The proposed land uses are consistent with the contemplated uses of the Business Park and Single-Family Residential designations. This project will preserve the mapped environmentally sensitive areas.

2. *Is the trend of development in the area consistent with this request?*

There is no trend of development in the immediate area. Development has been dormant since the 2008 Great Recession. The single-family portion of the project is in keeping with the established but dormant trend along the Village's northern boundary. This development will be located immediately adjacent to the existing Hannaford Farm single-family neighborhood. The proposed commercial and industrial uses are a direct result of the establishment of the interchange at I-88 and Sugar Grove Parkway. The interchange construction is a trend-setting development. The proposed uses are traditionally located near tollway interchanges and highway frontages.

3. *How are the permitted uses allowed by the rezoning more suitable for the property than the permitted uses allowed by the current zoning designation?*

The current zoning allows only large lot single-family residential dwellings. This is not the highest and best use of the property due to the accessibility and proximity of regional transportation infrastructure.

4. *Will this rezoning alter the character of the neighborhood or be detrimental to adjacent property?*

The addition of the interchange changes the character of this area. Historically, an interchange such as this brings commercial development to an area. The single-family residential portion of this project is in keeping with the established character of the adjacent area.

PUBLIC RESPONSE

The public hearing has been properly noticed. The Community Development Department has received a number of inquiries about this petition.

STAFF RECOMMENDATION

Staff recommends approval of Petition #18-010, subject to the following condition:

Substantial compliance with the following submitted plans and documents:

- Proposed PDD Ordinance including the following exhibits:
 - Exhibit C Astoria of Sugar Grove Lot Development and Architectural Design Guidelines
 - Exhibit D Crossroads Corporate Center of Sugar Grove Lot Development and Architectural Standards
 - Exhibit E Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted and Special Uses
 - Exhibit F Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted and Special Accessory Uses
 - Exhibit G Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted Yard Obstructions
- Preliminary Landscape Plan prepared by Signature Design Group dated 12.05.2018 revised 12.26.2018
- Crown PD District Regulating Plan prepared by Kimley-Horn
- Master Sign Plan prepared by Signature Design Group dated 12.05.2018 revised 12.26.2018

SAMPLE MOTION

Based upon presented testimony and finding of facts, I recommend that the Village Board approve Petition #18-010, subject to the following condition:

Substantial compliance with the following submitted plans and documents:

- Proposed PDD Ordinance including the following exhibits:
 - Exhibit C Astoria of Sugar Grove Lot Development and Architectural Design Guidelines
 - Exhibit D Crossroads Corporate Center of Sugar Grove Lot Development and Architectural Standards
 - Exhibit E Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted and Special Uses
 - Exhibit F Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted and Special Accessory Uses
 - Exhibit G Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted Yard Obstructions
- Preliminary Landscape Plan prepared by Signature Design Group dated 12.05.2018

revised 12.26.2018

- Crown PD District Regulating Plan prepared by Kimley-Horn
- Master Sign Plan prepared by Signature Design Group dated 12.05.2018 revised 12.26.2018

ATTACHMENTS

- Land Development Application prepared by Crown Community Development dated received 12.07.2018
- Proposed PDD Ordinance including the following exhibits:
 - Exhibit C Astoria of Sugar Grove Lot Development and Architectural Design Guidelines
 - Exhibit D Crossroads Corporate Center of Sugar Grove Lot Development and Architectural Standards
 - Exhibit E Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted and Special Uses
 - Exhibit F Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted and Special Accessory Uses
 - Exhibit G Crossroads Corporate Center of Sugar Grove and Astoria of Sugar Grove Permitted Yard Obstructions
- Preliminary Landscape Plan prepared by Signature Design Group dated 12.05.2018 revised 12.26.2018
- Crown PD District Regulating Plan prepared by Kimley-Horn
- Master Sign Plan by Signature Design Group dated 12.05.2018 revised 12.26.2018
- Existing Tree Survey prepared by Signature Design Group dated 12.05.2018
- Wetlands Map prepared by Hey and Associates, Inc dated 09.21.18
- The Crossings Development Traffic Impact Study prepared by Kimley-Horn dated November 2018.
- Kane DuPage Soil and Water Conservation District Land Use Opinion



RYV18-010
11899750
✓1352

LAND DEVELOPMENT APPLICATION

DEVELOPMENT NAME: Crossroads Corporate Center and Astoria of Sugar Grove

ADDRESS OF PROPERTY: NW, NE, SE quadrants of I-88 and Route 47

PARCEL IDENTIFICATION NUMBER (PIN): See attached PIN list

APPROVAL REQUESTS: (Check all that apply)

- Annexation (must include executed petition to annex)
- Annexation Amendment
- Special Use for _____
- Rezoning from Estate Residential (E1) and F (Kane County) to Planned Development District (PDD)
- Zoning Variance
- Preliminary Plat of Subdivision
- Final Plat of Subdivision
- Preliminary PUD
- Final PUD
- PUD Minor Amendment
- PUD Major Amendment
- Temporary Use
- Special Accessory Use for _____
- Appeal

PETITIONER INFORMATION:

Name: Sugar Grove, LLC (Marvin Bailey)

Address: 1751A West Diehl Road

City: Naperville State: IL Zip: 60563

Phone: 630-851-5490 Email: mbailey@crowm-chicago.com

CONTACT PERSON (All review comments will be sent to this person)

Name: Jennifer Cowan

Address: 1751A West Diehl Road

City: Naperville State: IL Zip: 60563

Phone: 630-851-5490 Email: jcowan@crowm-chicago.com

ACREAGE OF PROPERTY: 760.87 Acres

CURRENT ZONING DISTRICT: Estate Residential (E1) and F (Kane County - Farming District)

DESCRIPTION OF PROPOSAL/USE:

The southernmost 78 acres will be developed for residential uses, with the balance of the property being developed primarily for warehouse/distribution uses as well as some commercial uses and a maximum 350 unit multi-family component. Open space enhancements including interconnected trail systems will be developed with a minimum of 190 acres of open space preserved as part of the overall project. Rezoning from E1 and F to PDD will facilitate the development of these land uses at the soon to be constructed I-88/Rt. 47 full interchange. The proposed land uses are appropriate given the proximity to the interchange.

REQUESTED VARIATIONS/DEPARTURES FROM ZONING AND/OR SUBDIVISION ORDINANCES:

See attached for listing of variances

PETITIONER'S SIGNATURE

I hereby affirm that I have full legal capacity to authorize the filing of this application and that all information and exhibits herewith submitted are true and correct to the best of my knowledge. The applicant invites Village representatives to make all inspections and investigations of the subject property during the period of processing this application. The applicant understands that they are responsible for posting of all hearing signs, mailing of all surrounding property owner notices and publication of legal notices as required under the Zoning Ordinance, unless advised otherwise by the Village.

12/7/18
DATE

Marvin Bailey
SIGNATURE OF PETITIONER

STATE OF ILLINOIS

COUNTY OF DuPage

I, the undersigned, a Notary Public in and for the said County and State aforesaid, do hereby certify that Marvin Bailey is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and that said person signed, sealed and delivered the above petition as a free and voluntary act for the uses and purposes set forth.

Sandra H Keezer
Notary Signature

Given under my hand and notary seal this 7th day of December A.D. 2018
My commission expires this 28th day of May A.D. 2021.



OWNER'S AUTHORIZATION LETTER

I/we hereby certify that I/we am/are the owner(s) of the above described property. I/we am/are requesting approval of the request(s) referenced in this petition. I/we hereby authorize the petitioner to act on my/our behalf during the processing of this/these request(s).

Marvin Bailey
1st Owner Signature

12/7/18
Date

Marvin Bailey, Authorized Signatory
1st Owner Name

2nd Owner Signature

Date

2nd Owner Name

STATE OF ILLINOIS
COUNTY OF DuPage

I, the undersigned, a Notary Public in and for the said County and State aforesaid, do hereby certify that Marvin Bailey is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and that said person signed, sealed and delivered the above petition as a free and voluntary act for the uses and purposes set forth.

Sandra H. Keezer
Notary Signature

Given under my hand and notary seal this 7th day of December A.D. 2018
My commission expires this 28th day of May A.D. 2021





ACKNOWLEDGEMENT OF FINANCIAL RESPONSIBILITY AND REIMBURSEMENT OF FEES

It is the policy of the Village of Sugar Grove ("Village") to require an escrow deposit for all land development applications which require review and approval by the Village. Said account shall be established to cover all costs associated with the processing of the request, including, but not limited to, professional services (e.g. attorneys, engineers, planners, architects, or other external consultants), administrative and processing costs (e.g. required mailings, notices of publication, document recording), and staff time. Land development applications include new or amendments to annexation agreements, rezoning, planned developments, subdivisions, requests for TIF benefits or other financial incentives.

The initial escrow deposit shall be submitted in accordance with Village Ordinance. If the balance of the account falls below fifty percent (50%) of the original deposit, the petitioner/ applicant shall receive written notification from the Village on its monthly invoice. Upon the occasion that such escrow balance falls below fifty percent (50%), no additional processing and review will take place until said balance is replenished to its original amount. Upon final review by the Village, any balance remaining at the completion of the Project will be refunded. No interest shall accrue on said escrow deposit.

Escrow deposits shall be non-transferrable. Should the subject property be transferred or sold, the new owner and/or developer shall be required to establish a separate escrow account with the Village.

By signing below, I hereby acknowledge that I have read and agree to be bound by the terms of this Agreement.

Marvin Bailey, Authorized Signatory

RESPONSIBLE PARTY NAME (Print)

SIGNATURE

RELATIONSHIP: PROPERTY OWNER PETITIONER DEVELOPER CONTACT OTHER

Standards for Rezoning

Please answer each item completely. If additional space is needed, please attach sheets to this form.

1. Will this rezoning change promote the public health, safety, comfort, convenience and general welfare of the village and comply with the policies of the comprehensive land use plan and other plans adopted by the village?

The requested rezoning of the property is in conformance with the current village Comprehensive Plan. The development will substantially increase the village tax base and provide significant employment opportunity.

2. Is the trend of development in the area consistent with this request?

This type of development has not been constructed in the village previously due to the lack of connectivity along the I-88 corridor. The direct access to I-88 as a result of the completion of a full interchange positions the property well for a corporate park. A residential component will be constructed which provides for transitioning in land uses in the village and buffers existing residents from the corporate park.

3. How are the permitted uses allowed by the rezoning more suitable for the property than the permitted uses allowed by the current zoning designation?

Currently the annexed portion of the land is zoned E-1 with the current land use being agricultural. This is not the highest and best use of the property, particularly given the location in relation to the upcoming interchange. Given the enhanced access to the I-88 corridor, a corporate park is a more suitable use. Additionally, the Chicago metro residential market remains cold, and there is no large scale demand for estate lots at this location.

4. Will this rezoning alter the character of the neighborhood or be detrimental to adjacent property?

Adjacent existing residential along the southern boundary will be buffered by proposed residential which provides for transitioning in land uses in the village. The remaining adjacent surrounding areas consist of some county residential and agricultural lands located in unincorporated Kane County.

The completion of the interchange alone would alter the character of the area, we are proposing land uses which are appropriate at a full access interchange along a desirable corridor, consistent with the Village's comprehensive plan for this area.

SUGAR GROVE LLC P.I.N.s

| PIN |
|-----------------|
| 11-29-352-001 ✓ |
| 11-29-376-011 ✓ |
| 11-29-376-012 ✓ |
| 11-29-400-006 ✓ |
| 11-29-400-007 ✓ |
| 11-30-477-004 ✓ |
| 11-31-200-016 ✓ |
| 11-31-200-Q17 ✓ |
| 11-32-100-005 ✓ |
| 11-32-100-021 ✓ |
| 11-32-100-022 ✓ |
| 11-32-100-023 ✓ |
| 11-32-100-024 ✓ |
| 11-32-200-001 ✓ |
| 11-32-200-005 ✓ |
| 11-32-200-013 ✓ |
| 11-32-200-014 ✓ |
| 11-32-328-004 ✓ |
| 11-32-328-007 ✓ |
| 11-32-426-004 ✓ |
| 11-32-426-006 ✓ |
| 11-32-426-009 ✓ |
| 11-33-100-014 ✓ |
| 11-33-100-015 ✓ |
| 11-33-300-003 ✓ |
| 11-33-300-007 ✓ |
| 11-33-400-Q12 ✓ |
| 14-04-100-001 ✓ |
| 14-04-100-011 ✓ |
| 14-04-100-012 ✓ |
| 14-04-100-022 ✓ |
| 14-04-100-023 ✓ |
| 14-04-100-024 ✓ |
| 14-04-100-026 ✓ |
| 14-04-100-028 ✓ |
| 14-04-100-030 ✓ |
| 14-04-100-032 ✓ |
| 14-04-200-004 ✓ |
| 14-04-200-019 ✓ |
| 14-05-200-028 ✓ |
| 14-05-200-041 ✓ |

Crossroads Corporate Center of Sugar Grove

Astoria of Sugar Grove

Planned Development District

The 760.87 acres subject to the rezoning request will contain a variety of uses such as warehouse/distribution facilities, retail/commercial, up to 350 units of multi-family in the Crossroads Corporate Park of Sugar Grove and single family residential lots in Astoria of Sugar Grove. These uses are consistent with the current Village Comprehensive Plan. The project will significantly expand the overall tax base in the Village and will provide employment opportunities for a significant number of workers.

The 2019 commencement of construction of a full access interchange at I-88 and Sugar Grove Parkway greatly enhances connectivity between the Village and the I-88 corridor. A full interchange at Sugar Grove Parkway provides for an opportunity to meet pent up demand along the I-88 corridor for distribution/warehouse facilities, as land to the east is nearly built out and existing facilities in the corridor have become antiquated or lack the space users now require. Architectural and landscaping guidelines will be in place at both the Village and Developer level, with the more restrictive of the two controlling in order to ensure good aesthetics in the corporate park. Crossroads Corporate Park is projected to build out over a ten year timeframe.

Astoria, the single-family residential development located in the southernmost portion of the property, will provide buffering to lots currently in the Village. This residential will serve as a transition between existing Village residential and the corporate park uses. The lot mix will consist of 75' and 85' single family lots at a density of roughly 2.5 units/acre, well below the 3 unit/acre allowed under R-2 zoning. Although a variance from the 40% residential open space requirement is requested, the overall project will contain a minimum of 25% open space, which is equivalent to 190 acres, in perpetuity. These open space areas will be enhanced with manicured and native landscaping, extensive interconnected trail systems, shade structures, and resting spots along the trail system and will be maintained by the respective owners associations in which they reside.

As the owner of the property, Crown Community Development will act as the Master Developer of all infrastructure improvements in Crossroads Corporate Park and will fully develop the required infrastructure to serve Astoria residential lots. The review process will involve a consolidation of the preliminary and final plan review processes, since the ultimate final platting configuration of individual buildings in Crossroads Corporate Park is not yet known and due to the need to preserve lot size flexibility for future developers/users. Each Zoning Lot will be platted as one large lot and Crown Community Development will grade and provide infrastructure improvements to each zoning lot. The developers/users of the individual lots/buildings will then separately complete the re-platting process when the size and configuration of each building is known.

DRAFT

DRAFT



**VILLAGE OF SUGAR GROVE
KANE COUNTY, ILLINOIS**

ORDINANCE NO.

**AN ORDINANCE APPROVING A ZONING MAP AMENDMENT FOR PROPERTY LOCATED WITHIN THE
CORPORATE LIMITS OF THE VILLAGE OF SUGAR GROVE AND
APPROVING ZONING FOR LAND NEWLY ANNEXED TO
THE VILLAGE OF SUGAR GROVE, KANE COUNTY, ILLINOIS
(ASTORIA OF SUGAR GROVE/CROSSROADS OF SUGAR GROVE)**

Adopted by the
Board of Trustees and President
of the Village of Sugar Grove
this day of , 2019

Published in Pamphlet Form
by authority of the Board of Trustees
of the Village of Sugar Grove, Kane County,
Illinois, this day of , 2019.

ORDINANCE NO.

AN ORDINANCE APPROVING A ZONING MAP AMENDMENT FOR PROPERTY LOCATED WITHIN THE CORPORATE LIMITS OF THE VILLAGE OF SUGAR GROVE AND APPROVING ZONING FOR LAND NEWLY ANNEXED TO THE VILLAGE OF SUGAR GROVE, KANE COUNTY, ILLINOIS (ASTORIA OF SUGAR GROVE/CROSSROADS OF SUGAR GROVE)

BE IT ORDAINED by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, as follows:

WHEREAS, the Village of Sugar Grove is not a home rule municipality within Article VII, Section 6A of the Illinois Constitution and, pursuant to the powers granted to it under 65 ILCS 5/1-1 *et seq.*; and,

WHEREAS, the land described in **Exhibit "A"** attached to this ordinance has newly annexed to the Village of Sugar Grove; and,

WHEREAS, such land is the subject of an annexation agreement which provides that the Village would zone said lands in accordance with that agreement; and,

WHEREAS, prior to the annexation of the land and the execution of the annexation agreement, all hearings required to be held before agencies of the Village took place pursuant to proper legal notice including publication and notice to all surrounding owners;

WHEREAS, the land described in **Exhibit "B"** attached to this ordinance is currently zoned E-1 Estate Residential in the Village of Sugar Grove; and,

WHEREAS, all hearings required to be held before agencies of the Village took place pursuant to proper legal notice including publication and notice to all surrounding owners; and,

WHEREAS, prior to the annexation of the land and the execution of the annexation agreement, all hearings required to be held before agencies of the Village took place pursuant to proper legal notice including publication and notice to all surrounding owners;

NOW, THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, as follows:

SECTION ONE: ZONING CLASSIFICATION

That the property legally described in **Exhibit A** attached hereto and **Exhibit B** attached hereto and incorporated herein as if fully set forth in the body of this ordinance shall be and is hereby zoned and placed as follows:

Planned Development District, subject to all provisions and conditions as set forth in Exhibits C- G attached.

The Zoning Ordinance of the Village of Sugar Grove, Kane County, Illinois is hereby amended to provide for said zoning classification on said property

SECTION Two: GENERAL PROVISIONS

REPEALER: All ordinances or portions thereof in conflict with this annexation ordinance are hereby repealed.

SEVERABILITY: Should any provision of this ordinance be declared invalid by a court of competent jurisdiction, the remaining provisions will remain in full force and effect the same as if the invalid provision had not been a part of this ordinance.

EFFECTIVE DATE: This ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form as provided by law.

PASSED AND APPROVED by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois this day of , 2019.

P. Sean Michels,
President of the Board of Trustees
of the Village of Sugar Grove, Kane
County, Illinois

ATTEST: _____
Cynthia L. Welsch
Clerk, Village of Sugar Grove

| | Aye | Nay | Absent | Abstain |
|-----------------------|------------|------------|---------------|----------------|
| Trustee Sean Herron | _____ | _____ | _____ | _____ |
| Trustee Mari Johnson | _____ | _____ | _____ | _____ |
| Trustee Ted Koch | _____ | _____ | _____ | _____ |
| Trustee Heidi Lendi | _____ | _____ | _____ | _____ |
| Trustee David Paluch | _____ | _____ | _____ | _____ |
| Trustee Rick Montalto | _____ | _____ | _____ | _____ |

Planned Development Ordinance 2018-_____

Exhibit A

Crown Planned Development District

Legal Description

Planned Development Ordinance 2018-_____

Exhibit B

Crown Planned Development District

Legal Description

Planned Development Ordinance 2018-_____

Exhibit C

Astoria of Sugar Grove

Lot Development and Architectural Standards

Full compliance with the R-2 Detached Residential requirements of the Village of Sugar Grove Zoning Ordinance as of _____ is required with the following exceptions and augmentations:

Lot Size

Minimum lot size is 10,000 square feet.

Minimum Lot Depth

134 feet

Lot Width

Minimum lot width is 75 feet for a maximum of sixty five percent (65%) of total lots. The remaining lots shall have a minimum lot width of 85 feet.

Minimum Floor Area

Minimum floor area, less garage and basement space, shall be at least 1,800 square feet for a one (1) story building and 2,200 square feet for a two (2) story building.

Lot Coverage

Maximum percentage of a lot occupied by impervious surface (any material which reduces and prevents absorption of storm water into previously undeveloped land) is forty five (45%).

Open Space

A minimum forty percent (40%) of the land area of Astoria of Sugar Grove will be set aside as permanent open space.

Setbacks

Street: 25 feet
Interior: 9 feet
Rear: 30 feet

Maximum Horizontal Expanse

The maximum horizontal expanse without a four foot (4') offset is thirty nine feet (39') on all street and common area facing front and rear facades. The maximum horizontal expanse without a two foot (2') offset is thirty nine feet (39') on all street and common area side facing facades.

Garage

Front load garages shall have decorative doors (i.e. panels or clear windows). Three car front load garages shall be constructed with the third car bay offset by at least two feet (2'). No front load garage shall exceed sixty percent (60%) of the street façade. Garage openings shall be trimmed with materials that match the building trim and at least four inches (4") in width. Front load garages shall not extend beyond the entry feature of the house (i.e. front porch, front stoop)

Exterior Wall Materials

The following materials are permitted:

- Cement Board
- Full Face Brick

- Stone (Cultured Permitted)
- Horizontal Wood
- Wood Shakes
- Stucco
- A minimum of forty percent (40%) of the homes in this development shall include masonry as an exterior wall material. The required masonry materials shall be installed on the front façade as a wainscot or a gable feature.

The following material is permitted only as an accent:

- EIFS

Trim

The following building trim is required:

- All trim shall be either: black, white, brown, gray, cream, or beige.
- Door and window openings on all facades shall have a minimum four inch (4") wide trim.
- All corners shall be finished with a minimum four inch (4") wide corner board.
- All street facing facades and common area facing facades shall include:
 - a minimum six inch (6") wide frieze board, and
 - a minimum six inch (6") wide horizontal band board (not required on 100% masonry façade).

Chimney

Direct vent chase may be installed on the exterior of the building; however, the chase shall extend at least three feet (3') above the eave and shall be located no closer than eight inches (8") from the ground.

Roofing

The following roofing materials are permitted:

- Architectural shingles
- Standing seam metal
- Cedar shake
- Slate

Windows

Window openings shall be finished with a minimum four inch (4") wide trim. Window muntins, both vertical and horizontal, are required on all street and common area facing facades.

Enhanced Elevations

Street and common area facing facades shall be improved with the following features:

- Minimum four inch (4") wide window and door trim
- Minimum four inch (4") wide corner boards
- Minimum six inch (6") wide frieze boards
- Minimum six inch (6") wide horizontal band boards (Not required on 100% masonry façade)

Monotony

The same elevation shall not be utilized on lots next to, across the street from or diagonal each other on the same street frontage. The same elevation shall be separated by a minimum of two buildings whether on the same or opposing block face.

Primary Entrance

The primary entrance shall be located on a street façade. The primary entrance shall be covered for a depth of at least four feet (4') unless otherwise approved by the Director of Community Development. Posts shall support the covered entry and shall match the building style. The covered entry shall be accessible by at least one (1) riser.

Planned Development Ordinance 2019-
Exhibit D
Crossroads Corporate Center of Sugar Grove
Lot Development and Architectural Design Guidelines

Where this document is silent, the Village of Sugar Grove Zoning Ordinance requirements of the BP Business Park district shall apply.

Note: Site Plan, Building Elevation Plans, Lot Landscape Plans, and Lot Photometric Plans shall be approved by a simple majority of the Village of Sugar Grove Corporate Authorities prior to application for building permit.

Lot Size

Minimum lot size is forty thousand (40,000) square feet.

Lot Width

Minimum lot width is one hundred (100) feet.

Lot Coverage

Maximum percentage of each individual lot occupied by impervious surface (any material which reduces and prevents absorption of storm water into previously undeveloped land) is ninety percent (90%) for industrial lots and seventy percent (70%) for commercial lots.

Building Setbacks

- Zoning Lots

Street Lot Line (except Denny Road and I-88): Seventy five feet (75')

Denny Road and I-88 Lot Line: Fifty feet (50')

Other Lot Lines: Fifty feet (50')

- Interior Lots

Street Lot Line (including private drives): Thirty feet (30')

Other Lot Lines: Fifteen feet (15')

Vehicle Use Area Setbacks

- Zoning Lots

Street Lot Line (South of I-88): Fifty feet (50')

Street Lot Line (North of I-88): Thirty five feet (35')

I-88 Street Lot Line: Thirty five feet (35')

Other Lot Lines: Twenty five feet (25')

- Interior Lots

Street Lot Line (private drive): Fifteen feet (15')

Other Lot Lines: Zero feet (0')

Building Height

Maximum building height for Warehouse/Distribution uses: Sixty feet (60')

Maximum building height for all other uses: Fifty feet (50') as long as use is located one hundred fifty feet (150') or more from a residential use

Maximum building height for all other uses: Thirty five feet (35') where the use is located within one hundred fifty feet (150') of a residential use

Maximum building height for multiple family residential: Fifty feet (50')

Change of maximum building height may be granted.

Building Materials

The following building materials are permitted:

- Precast Concrete Panels
- Cement Board
- Full Face Brick
- Stone (Cultured Permitted)
- Wood
- Insulated Metal Panel (limited to cold storage facilities only)

Articulation

Any façade parallel with, or within twenty percent (20%) of parallel, a public right of way shall provide a break in the horizontal expanse at 100 feet intervals. The break may be accomplished by the following:

- Building materials
- Color change
- Texture change
- Windows
- Four foot (4') deep offset

Any façade parallel with Merrill Road, Seavey Road, Sugar Grove Parkway, and/or Denny Road shall include windows.

Entryway

Any façade parallel with Merrill Road, Seavey Road, Sugar Grove Parkway, or Denny Road shall be designed with an entryway which is the focal point of the building.

Roof Mounted Equipment

All roof mounted equipment which extends four feet (4') or greater above the roof plane shall be screened from view from nearest property line. Commercial buildings shall make use of parapet walls, wherever feasible, to screen roof mounted equipment. Industrial buildings may utilize dark colored screening enclosures or fences.

Off-Street Parking

Required parking facilities for industrial uses shall be located within one thousand feet (1000') of use served.

Required parking facilities for commercial uses shall be located within five hundred feet (500') of use served.

Required number of parking spaces per use:

Multifamily = 1.5 per dwelling unit

Restaurant = 1 per 100 square feet of floor area + 8 stacking spaces per drive through window

Office = 3 per 1,000 square feet of floor area

Light industrial including warehousing = 1 per employee at peak shift plus 10 visitor spaces

All other uses shall comply with the provision of Section 11-12-3 of the Village of Sugar Grove Zoning Ordinance

Vehicle Use Area Design Standards

An interior landscape island measuring at least eighteen feet (18') in depth and ten feet (10') in width shall be installed and maintained at the end of each parking row and at each ten (10) parking spaces in parking lots that serve commercial or residential uses and at each twenty five (25) parking spaces in parking lots that serve industrial uses. Each interior landscape island shall be improved with shade tree(s) and shrubs or perineal grasses.

Surfacing standards shall comply with section 11-12-6 of the Village of Sugar Grove Zoning Ordinance.

Six inch (6") barrier curb is required around the perimeter of vehicle use areas from the front building line to the street right of way for industrial lots. Six inch (6") barrier curb is required around the perimeter of vehicle use areas for commercial and residential uses.

One way driveways shall not exceed twenty feet (20') in width at the street lot line and for twenty feet (20') onto the lot. Two way driveways shall not exceed thirty five feet (35') in width at the street lot line and for twenty feet (20') onto the lot.

Wherever possible truck/trailer parking and circulation shall be segregated from automobile parking and circulation.

Landscape Materials

Within yards created by Vehicle Use area Setbacks the following minimum landscape materials are required:

- Zoning Lots

Street Lot Line: An undulating and meandering earthen berm with an average height of 4 feet, where site conditions permit, plus the following plant materials: one (1) evergreen tree and one (1) shade tree per fifty feet (50') plus one (1) ornamental tree and ten (10) shrubs per one hundred linear feet (100'). No shrubs required in the I-88 landscape yard.

Other Lot Lines: One (1) shade tree and six (6) shrubs per fifty linear feet (50')

Earthen berms shall be designed and installed in an undulating and meandering manner, where site conditions permit.

- Interior Lots

Street Lot Line (including private drives): One (1) tree and six (6) shrubs per fifty linear feet (50')

Other Lot Lines = No required landscape materials

Foundation plantings are required along all portions of façades which are parallel with public rights of way except I-88. Foundation plantings are required along all sides of a commercial building adjacent to a public parking lot. The following plant materials are required:

- Ten foot (10') wide landscape beds: one (1) ornamental tree, three (3) columnar evergreens and fifteen (15) shrubs (or grasses) per one hundred (100) linear feet.
- Five foot (5') wide landscape beds: five (5) columnar evergreens and fifteen (15) shrubs (or grasses) per one hundred (100) linear feet.
- All landscape beds shall contain perennial accent plantings near the main entrance(s) of the building.
- Commercial uses shall contain the following foundation plantings: six (6) shrubs or perennial grasses per twenty feet (20') plus perennial flowering plants.

No foundation landscape bed on a commercial lot shall measure less than eight feet (8') in width.

Trailer Storage

Trailers may be stored on industrial lots subject to the following standards:

- Trailer storage shall not be allowed within any street yard with the exception of the I-88 street yard.
- Trailers shall be stored on an improved surface.
- Trailer storage areas may require screening along Zoning Lot lines.

- Trailers stored on a lot shall not exceed the ratio of two (2) trailers per one (1) truck dock.
- Trailers shall not be used for storage.
- Trailer storage is permitted only as an accessory use on a lot.

Pedestrian Circulation

All parking areas shall be designed without conflict between vehicles and pedestrians. Parking lots adjacent to the office areas of industrial buildings shall be constructed with a minimum five foot (5') wide raised pedestrian sidewalk between the parking lot and the building along the office frontage. Parking lots adjacent to commercial buildings shall be constructed with a minimum eight foot (8') raised pedestrian sidewalk between the parking lot and the building. All accessibility codes shall be met.

Bicycle Facilities

Commercial and multifamily residential uses shall comply with section 11-12-10 of the Village of Sugar Grove Zoning Ordinance.

Industrial uses shall provide bicycle facilities at the rate of one percent (1%) of the total vehicle parking spaces provided.

Illumination

All uses shall comply with Chapter 18 of the Village of Sugar Grove Zoning Ordinance with the following exception:

- On industrial lots, the maximum light pole height behind the front building line is forty feet (40').

Fencing

A maximum fence height of eight feet (8') shall be permitted within the interior and rear yards of industrial lots. A maximum fence height of six feet (6') shall be permitted within the interior and rear yards of commercial and multifamily lots. No fences are permitted within the street yards, with the exception of the I-88 street yard. Metal fences, including chain link fences, shall be black. Solid fencing shall be finished wood or composite material. Vinyl fencing is not permitted.

Truck Docks

Truck docks shall not be located on facades which are parallel with, or within twenty percent (20%) of parallel, a street lot line. Landscaping in truck court islands shall be installed and maintained to screen views from public rights of way and contain one (1) evergreen tree per ten linear feet (10').

Open Space

All permanently preserved open space shall be accessible by an interconnected multi-use path system where site conditions allow. Any path constructed shall be a minimum ten feet (10') wide and shall be paved. All permanently preserved open space and paths shall be owned and/or maintained by a property owner's association.

Path and open space development shall conform to attached Landscape Plan dated _____

Signage

- Temporary Signs

Before Occupancy: Regulated by Annexation Agreement

After Occupancy: Temporary signs shall comply with Chapter 14 of the Village of Sugar Grove Zoning Ordinance as amended from time to time.

- Permanent Signs

Wall Signs along I-88: ten percent (10%) of the façade surface area up to a maximum of two hundred (200) square feet in sign surface area. A building of ten (10) or more stories may be allowed twenty percent (20%) of the façade surface area up to a maximum of three hundred (300) square feet of sign surface area.

Wall Signs along all other public streets: one (1) square foot of signage per one (1) linear foot of street facing façade width up to a maximum of two hundred (200) square feet of sign surface area. Illumination shall comply

with the Village of Sugar Grove Zoning Ordinance with the exception of wall signage facing Denny Road. Wall signs facing Denny Road shall **not** be illuminated.

Freestanding Signs on individual lots: one (1) monument style sign per each one hundred fifty feet (150') of public street frontage. Each freestanding sign shall be no more than one hundred twenty (120) square feet in structure size with a maximum height of ten feet (10'). The area devoted to sign surface area shall not exceed sixty (60) square feet.

Development Identification Signs

Development identification signs shall comply with attached Sign Plan dated 12.26.18

Planned Development Ordinance 2019-
Exhibit E

Crossroads of Sugar Grove and Astoria of Sugar Grove

Permitted and Special Uses

Crossroads of Sugar Grove
Zoning Lots 1-5

| Use | |
|--|---|
| Agriculture uses: | |
| Agricultural implement sales and service | S |
| Field crops | P |
| Hay, grain and feed store | P |
| Kenel (breeding or boarding) | S |
| Pet grooming facility | P |
| Plant nursery, including retail sales | P |
| Tack shop | P |
| Veterinarian clinic | P |
| Commercial uses: | |
| Art gallery | P |
| Auction room | S |
| Bank and financial institution | S |
| Beauty shop, barbershop, and day spa | P |
| Bicycle sales and service | P |
| Car wash | S |
| Carpet and upholstery cleaners | P |
| Catering service | P |
| Cleaning and exterminating service | P |
| Clothing and costume rental store | P |
| Currency exchange | S |
| Drinking establishment | P |
| Equipment rental and leasing service without outdoor storage | P |
| Equipment rental and leasing service with outdoor storage | S |
| Florist | P |

| | |
|---|----|
| Food store | P |
| Food store, convenience | P |
| General repair service | P |
| General retail | P |
| Home improvement retail with lumberyard | P* |
| Hotel | P |
| Ice cream parlor | P |
| Laundry service | P |
| Locksmith | P |
| Mailing service | P |
| Medical supply rental | P |
| Motor vehicle fuel station | S |
| Motor vehicle parts retail | P |
| Motor vehicle rental | S |
| Motor vehicle sales | S |
| Package liquor or wine retail | S |
| Pharmacy | P |
| Picture framing | P |
| Printing and publishing | P |
| Resale shop | P |
| Restaurant | P |
| Restaurant, alcohol service | P |
| Restaurant, carry out | P |
| Restaurant, drive-through | P |
| Restaurant, live entertainment, or dancing | S |
| Small engine repair shop (not motor vehicles) | P |
| Sports and recreation, indoor | P |
| Sports and recreation, outdoor | S |
| Storage facilities | S |
| Tailor or dressmaker shop | P |
| Taxidermist | P |
| Theater | P |

| | |
|---|----|
| Undertaking establishment, funeral parlor and mortuary | P |
| Office uses: | |
| Contractor's office without outdoor storage | P |
| Contractor's office with outdoor storage | S |
| Counseling service | P |
| General office | P |
| Medical laboratory | P |
| Medical office | P |
| Industrial uses: | |
| Assembly | P |
| Data processing center | P |
| Food production | P |
| Industrial launderer | P |
| Manufacturing, heavy | P* |
| Manufacturing, limited | P* |
| Refuse or recycling facility | S* |
| Research and development laboratory and technology center | P |
| Sheet metal, machine, or welding shop | P |
| Sign fabrication | P |
| Warehouse and distribution | P |
| Residential uses: | |
| Home occupation | P* |
| Multi-family dwellings | P* |
| Civic uses: | |
| Animal shelter | P |
| Daycare, child | S |
| Daycare, adult | S |
| Commercial antenna | S |
| Fire station and facilities | S |
| Police station and facilities | S |
| Public works facilities | P |
| School, trade | P* |

* Shall comply with additional standards below.

ADDITIONAL STANDARDS FOR SPECIFIC USES:

***Home occupation:** shall comply with section 11-4-17 of the village of sugar grove zoning ordinance.

***Home improvement retail with lumberyard:** Lumberyard shall be accessory to the retail use of the property. The lumberyard shall occupy a land area less than 25% of the total floor area devoted to the home improvement retail sales use. The lumberyard shall be fully screened by a masonry wall at least six (6) feet in height which is compatible with the retail building architecture.

***Manufacturing.** Limited and heavy manufacturing operations must meet the following performance standards: Noise, glare, vibration, odor, etc., shall be regulated according to standards established by the Illinois Pollution Control Board of the Environmental Protection Agency, as may be amended from time to time.

***Multi-Family Dwellings:** Maximum of one (1) total multifamily development within the boundaries of the PDD with a maximum of 350 units and specifically located on any one zoning lot with the exception of zoning lot 5. Multifamily development shall provide an interconnected walking path throughout the site, a community room, an outdoor gathering space, and at least three (3) of the following amenities: Swimming pool; Fitness center; Media room; Sport courts.

***Refuse or recycling facility:** All operations shall be fully enclosed.

***School, trade:** All operations shall be fully enclosed.

Astoria of Sugar Grove

| Use | |
|---|----|
| Agriculture uses: | |
| Field crops | P |
| Residential uses: | |
| Accessory dwelling unit | S* |
| Home occupation | P* |
| Model home | S |
| Single-family dwelling, detached | P |
| Civic uses: | |
| Church, temple, mosque, synagogue, or religious retreat | S |
| Civic and community center building | S |
| Commercial antenna | S |
| Fire station and facilities | S |
| Public works facilities | P |

* Shall comply with additional standard below:

ADDITIONAL STANDARDS FOR SPECIFIC USES:

* **Accessory dwelling unit.** The unit may not comprise more than twenty five percent (25%) of the floor area of the principal

structure and is solely occupied by no more than two (2) persons related by blood or marriage to the owner of the principal residence.

* Home occupation. Must comply with section 11-4-17 of the village of sugar grove zoning ordinance.

Planned Development Ordinance 2019-

Exhibit F

Crossroads of Sugar Grove and Astoria of Sugar Grove

Permitted and Special Accessory Uses

| | | |
|----|---|---|
| A | = | Allowed |
| A* | = | Allowed Additional Standards Shall Be Met (See section B) |
| S | = | Special |
| N | = | Not allowed |

| | Astoria of Sugar Grove | Crossroads of Sugar Grove Zoning Lots 1-5 |
|---|------------------------|---|
| Accessory uses: | | |
| Commercial outdoor dining | N | A* |
| Commercial outdoor display | N | S |
| Commercial outdoor sales | N | S |
| Contractor's Yard | N | S |
| Drive-throughs | N | A* |
| Home occupation | A* | A* |
| Lighted recreational courts | S | S |
| Loading areas | N | A* |
| Recreational courts (basketball, volleyball, etc.) | A | A |
| Residential chicken keeping (principal use shall be single family, and valid residential chicken keeping permit issued) | A* | N |
| Accessory structures: | | |

| | | |
|---|----|----|
| Awnings and canopies | A | A |
| Balconies | A | A |
| Bay windows | A | A |
| Cart corrals | N | A* |
| Children's playhouses and playground equipment | A | S |
| Children's tree houses | A | N |
| Chimneys | A | A |
| Clotheslines for laundry | A | N |
| Commercial communications antennas and satellite dishes, including all transmitting, except for amateur radio, which are not "customer end" antennas and which are used to provide service or signals beyond the location in which they are installed | S | S |
| Commercial mechanical equipment (including generators, air conditioners, etc.) | N | A |
| Decks | A | A |
| Eaves and gutters | A | A |
| Fences, walls | A* | A* |
| Fuel or gas tanks (including above and below ground) | N | S |
| Gardens (vegetable, crop) | A | A |
| Hot tubs and outdoor spas | A | N |
| Kennels, dog runs | A | S |
| Loading docks | N | A* |
| Mailboxes | A | A |

| | | |
|---|----|----|
| Nonresidential off street parking lots and drive aisles and driveways | N | A* |
| Ornamental towers, scenery lofts, monuments, domes, spires, steeples, and water towers | A | A |
| Outdoor fireplaces and ovens | A | A |
| Parking lot light poles | S | A* |
| Patios, sidewalks | A | A |
| Pergolas, arbors, trellises | A | A |
| Picnic benches | A | A |
| Ponds | A | A |
| Recreational equipment (including basketball hoops, trampolines, etc.) | A | A |
| Residential communications antennas (TV, radio, etc.) and satellite dishes, including amateur radio and commercial communications antennas which are "customer end" antennas placed at a commercial location for purposes of providing services at the same location in which it is installed | A | A |
| Residential mechanical equipment (including generators, air conditioners, etc.) | A | A |
| Residential off street parking areas and driveways | A | A |
| Signs | A* | A* |
| Single bay car wash | N | A |
| Solar panel | A* | A* |
| Stairs, steps | A | A |

| | | |
|--|----|----|
| Swimming pools | A | S |
| Trash dumpster enclosures | N | A* |
| Vending machines (including pop, DVD, newspaper, etc.) | N | A* |
| Wind turbine | A* | A* |
| Accessory buildings: | | |
| Carport | A | N |
| Coop | A | N |
| Doghouse | A | A |
| Fuel canopies | N | S |
| Garages | A | S |
| Gazebo | A | A |
| Greenhouses | A | A |
| Guard shacks | N | A |
| Pen | A | N |
| Sheds | A | S |
| Storage buildings | A | S |

A. Standards for All Accessory Uses, Accessory Buildings, and Accessory Structures

1. **Building Permit Required.** With the exception of items measuring less than one (1) cubic yard, a building permit is required prior to the placement, construction, or occupancy of any accessory use, accessory building, or accessory structure.

2. **Size.** Each detached accessory building or structure on a residentially zoned lot shall not exceed one thousand (1,000) square feet or seventy percent (70%) of the principal building footprint, whichever is less. Each attached accessory building or structure on a residentially zoned lot shall not exceed forty five percent (45%) of the principal building footprint.

3. **Height.** No accessory use, accessory structure, or accessory building shall exceed the height of fifteen (15) feet, with the following exceptions:

a. Uses and buildings accessory to farming operations shall not exceed twenty five (25) feet in height.

b. Private stables shall not exceed twenty five (25) feet in height.

c. Flagpole and sign height is regulated by chapter 14 of this title.

d. Small wind and solar energy systems are regulated by section 20 and section 21 of this chapter.

e. Parking lot pole height is regulated by chapter 12 of this title.

f. Chimneys, ornamental towers, scenery lofts, monuments, domes, spires, steeples, water towers, customer end antenna (residential communications antennas and commercial communications antennas insofar as said antenna is placed at the commercial location for purposes of providing services at the locations in which it is installed) shall be erected to a customary height as determined by the zoning official.

4. Separation. Detached accessory buildings and structures shall be located a minimum of ten (10) feet from any other building or structure.

5. Easements. An accessory use, accessory building, or accessory structure may be located within a recorded easement if the following standards are met.

a. The easement is a minor drainage way (only draining the immediate adjacent lots).

b. The easement contains no public utilities such as storm sewer, sanitary sewer, or water main.

c. There shall be no construction within five (5) feet of the property line to accommodate drainage along the common lot line and allow for any future construction of minor utilities such as cable and street lighting.

6. Number. There shall be no more than three (3) accessory buildings and/or structures on a zoning lot.

7. Building Materials. Building materials of accessory buildings and structures shall be of high quality and shall generally match the building materials of the principal building.

8. Use. All uses conducted within accessory buildings and accessory structures shall be incidental to the principal use established on the zoning lot. No accessory use shall constitute a second principal use on the zoning lot. No accessory use, accessory building, or accessory structure shall be constructed or erected on a zoning lot prior to the construction or erection of the principal building.

B. Additional Standards for Specific Accessory Uses, Accessory Buildings, and Accessory Structures.

1. Commercial outdoor dining,

a. Commercial outdoor dining area shall be fully enclosed by a fence or wall which is compatible with the principal building style. An emergency egress shall be provided.

b. Off-street parking shall be provided at a rate of thirteen (13) spaces per one thousand (1,000) square feet of area devoted to commercial outdoor dining.

c. The area developed to commercial outdoor dining shall be improved with a solid surface of brick, concrete pavers or poured concrete.

d. Commercial outdoor dining area shall be operated only during regular business hours of the principal use.

2. Drive through.

a. Requirements of Chapter 12 of the village of Sugar Grove Zoning Ordinance shall be met.

3. Home occupation.

a. Requirements of Section 11-4-17 of the village of Sugar Grove Zoning Ordinance shall be met.

4. Loading area.

a. Requirements of Chapter 12 of the village of Sugar Grove Zoning Ordinance shall be met.

5. Residential chicken keeping.

a. Requirements of Title 5 of the village of Sugar Grove Municipal Code shall be met

6. Cart corral.

a. A cart corral located within twenty five (25) feet of the principal building on a zoning lot shall be improved with four (4) foot masonry screening walls that match the primary building material of the principal building.

b. A cart corral shall be located free of conflict with vehicular and pedestrian circulation on the zoning lot.

c. A cart corral shall be maintained free of signage.

7. Loading dock.

a. Requirements of Chapter 12 of the village of Sugar Grove Zoning Ordinance shall be met.

8. Fence and wall.

a. Requirements of Section 11-4-13 shall be met.

9. Residential and nonresidential off-street parking lot, driveway and drive aisle.

a. Requirements of Chapter 12 of the village of Sugar Grove Zoning Ordinance shall be met.

10. Parking lot light pole.

a. Requirements of Chapter 18 of the village of Sugar Grove Zoning Ordinance shall be met.

11. Sign, flag, and flagpole.

a. Requirements of Chapter 14 of the village of Sugar Grove Zoning Ordinance shall be met.

12. Solar panel.

a. Requirements of Section 11-4-21 of the village of Sugar Grove Zoning Ordinance shall be met.

13. Trash dumpster enclosure.

a. A trash dumpster enclosure shall be wholly maintained on a concrete surface.

b. A trash dumpster enclosure shall be fully enclosed by masonry walls six (6) feet in height. The masonry wall material shall match the primary building material of the principal building. Landscape materials shall be installed and maintained around the perimeter of the enclosure at a rate of one (1) evergreen shrub per each three (3) linear feet.

c. A trash dumpster enclosure shall be located free of conflict with the vehicular and pedestrian circulation of the zoning lot.

14. Vending machine.

a. A vending machine shall be located on an improved concrete surface.

b. A vending machine shall be located free of conflict with vehicular and pedestrian circulation on the zoning lot.

c. A vending machine shall display the owner name and contact information.

c. No more than two (2) vending machines shall be maintained on a zoning lot.

15. Wind turbines.

a. Requirements of Section 11-4-20 of the village of Sugar Grove Zoning Ordinance shall be met.

C. Special Accessory Uses shall comply with section 11-13-12 of the Village of Sugar Grove Zoning Ordinance.

Planned Development Ordinance 2019-

Exhibit G

Crossroads of Sugar Grove and Astoria of Sugar Grove

I. Crossroads of Sugar Grove Permitted Yard Obstructions

| | Street Yard | Side Yard | Rear Yard |
|--|--|--|--|
| Accessory uses: | | | |
| Commercial outdoor dining | P Minimum pavement setback | P Minimum pavement setback | P Minimum pavement setback |
| Loading areas | P Minimum pavement setback | P Minimum pavement setback | P Minimum pavement setback |
| Recreational courts (basketball, volleyball, etc.) | N | P Minimum 5' | P Minimum 5' |
| Accessory structures: | | | |
| Awnings and canopies | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Balconies (must be 4' above grade) | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Bay windows | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Cart corrals | P Minimum pavement setback | P Minimum pavement setback | P Minimum pavement setback |

| | | | |
|---|--|--|--|
| Chimneys | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Commercial mechanical equipment (including generators, air conditioners, etc.) | N | P Maximum 4' into building setback | P Maximum 4' into building setback |
| Dispensing cabinets | P Maximum 4' into building setback | P Maximum 4' into building setback | P Maximum 4' into building setback |
| Eaves and gutters | P Maximum 2' into building setback | P Maximum 2' into building setback | P Maximum 2' into building setback |
| Fences, walls | P | P | P |
| Gardens (vegetable, crop) | P | P | P |
| Loading docks | N | P Minimum building setback | P Minimum building setback |
| Mailboxes | P | N | N |
| Nonresidential off street parking lots and drive aisles and driveways | P Minimum pavement setback | P Minimum pavement setback | P Minimum pavement setback |
| Ornamental towers, scenery lofts, monuments, domes, spires, steeples, and water towers | N | P Minimum 5' | P Minimum 5' |
| Outdoor fireplaces and ovens | N | P Minimum 5' | P Minimum 5' |
| Parking lot light poles | P Minimum pavement setback | P Minimum pavement setback | P Minimum pavement setback |

| | | | |
|---|---|---|---|
| Patios | P Maximum 2' into building setback | P Maximum 2' into building setback | P Minimum 7.5' |
| Pergolas, arbors, and trellises | P Maximum 5' into building setback | P Minimum 5' | P Minimum 5' |
| Picnic benches | P Minimum 5' | P Minimum 5' | P Minimum 5' |
| Ponds | P Minimum 5' | P Minimum 5' | P Minimum 5' |
| Porch, open | P Maximum 5' into building setback | P Maximum 5' into building setback | P Maximum 5' into building setback |
| Sidewalks | P Minimum 1' | P Minimum 1' | P Minimum 1' |
| Signs, flags, and flagpoles | P | P | P |
| Solar panel | N | P | P |
| Stairs, steps (maximum 4' above grade) | P Minimum 1' | P Minimum 1' | P Minimum 1' |
| Terrace, open | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Trailer storage on industrial lots | N Exception is I- 88 street yard with 50' minimum | P Vehicle use area setback must be met | P Vehicle use area setback must be met |
| Trash dumpster enclosures | N | P Minimum 5' | P Minimum 5' |
| Wind turbines | N | P | P |

II. Astoria of Sugar Grove Permitted Yard Obstructions

| | Street Yard | Side Yard | Rear Yard |
|---|---|---|---|
| Accessory structures: | | | |
| Awnings and canopies | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Balconies (must be 4' above grade) | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Bay windows | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Children's playhouses and playground equipment | N | P Minimum 5' | P Minimum 5' |
| Children's tree houses | N | P Minimum 5' | P Minimum 5' |
| Chimneys | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Clotheslines for laundry | N | P Minimum 5' | P Minimum 5' |
| Decks (maximum 4' above grade) (4' or more above grade is considered a "balcony") | N | P Minimum 5' | P Minimum 5' |

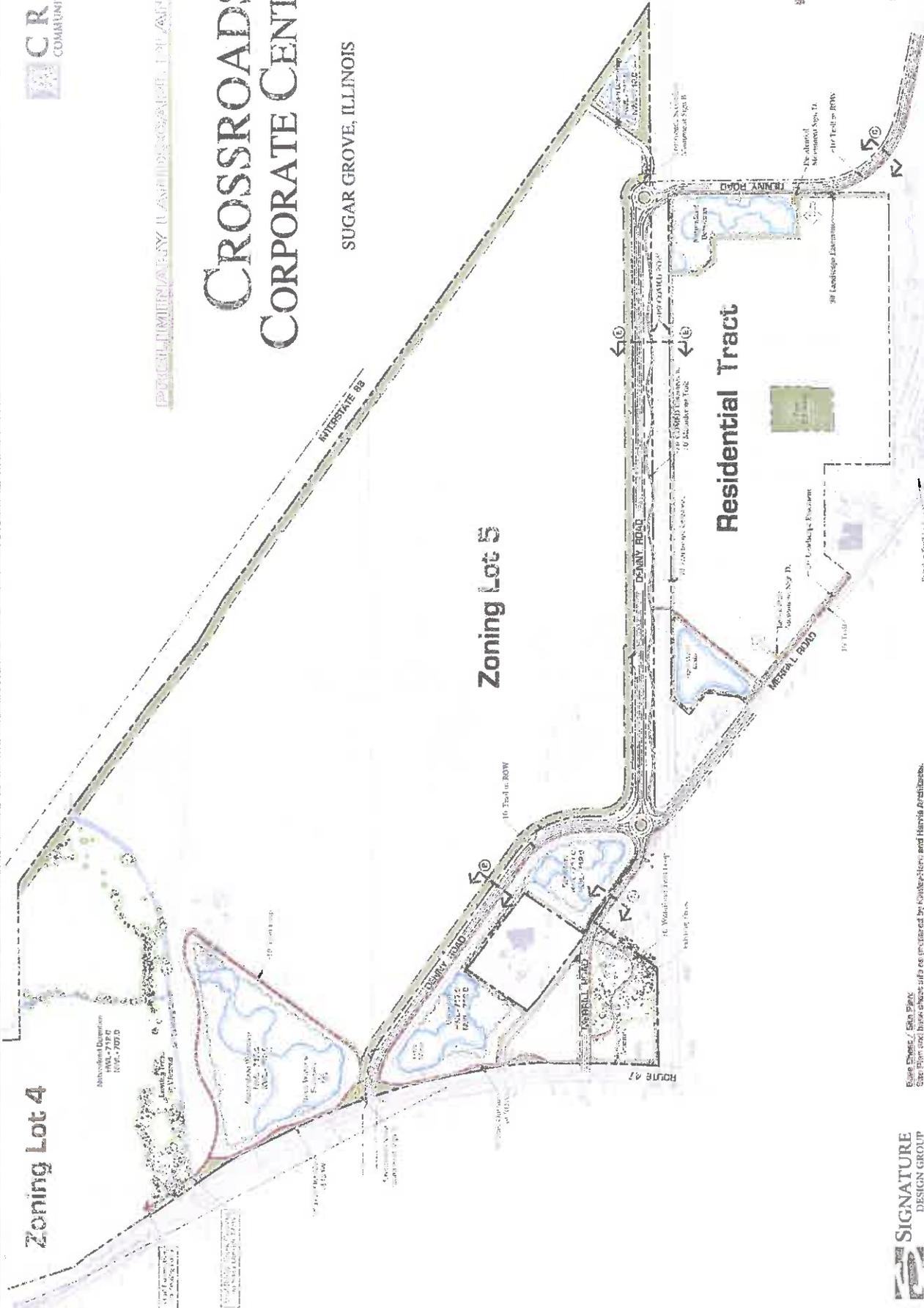
| | | | |
|--|--|--|--|
| Eaves and gutters | P Maximum 2' into building setback | P Maximum 2' into building setback | P Maximum 2' into building setback |
| Fences, walls | P | P | P |
| Gardens (vegetable, crop) | P | P | P |
| Hot tubs and outdoor spas | N | P Minimum 5' | P Minimum 5' |
| Kennels, dog runs | N | P Minimum 5' | P Minimum 5' |
| Mailboxes | P | N | N |
| Ornamental towers, scenery lofts, monuments, domes, spires, steeples, and water towers | N | P Minimum 5' | P Minimum 5' |
| Outdoor fireplaces and ovens | N | P Minimum 5' | P Minimum 5' |
| Patios | P Maximum 2' into building setback | P Maximum 2' into building setback | P Minimum 7.5' |
| Pergolas, arbors, and trellises | P Maximum 5' into building setback | P Minimum 5' | P Minimum 5' |
| Picnic benches | P Minimum 5' | P Minimum 5' | P Minimum 5' |
| Ponds | P Minimum 5' | P Minimum 5' | P Minimum 5' |

| | | | |
|--|--|--|--|
| Porch, open | P Maximum 5' into building setback | P Maximum 5' into building setback | P Maximum 5' into building setback |
| Recreational equipment (including basketball hoops, trampolines, etc.) | P Minimum 5' | P Minimum 5' | P Minimum 5' |
| Residential communications antennas (TV, radio, etc.) and satellite dishes greater than 40" in diameter, including amateur radio and commercial communications antennas which are "customer end" antennas placed at a commercial location for purposes of providing services at the same location in which it is installed | N | P Minimum 5' | P Maximum 4' into building setback |
| Residential mechanical equipment (including generators, air conditioners, etc.) | N | P Maximum 4' into building setback | P Maximum 4' into building setback |
| Residential off street parking areas and driveways | P Minimum 1' | P Minimum 1' | P Minimum 1' |
| Sidewalks | P Minimum 1' | P Minimum 1' | P Minimum 1' |
| Signs, flags, and flagpoles | P | P | P |
| Solar panel | N | P | P |
| Stairs, steps (maximum 4' above grade) | P Minimum 1' | P Minimum 1' | P Minimum 1' |
| Swimming pools | N | N | P Minimum 5' |

| | | | |
|-----------------------------|---|---|---|
| Terrace, open | P Maximum 24" into building setback | P Maximum 24" into building setback | P Maximum 24" into building setback |
| Wind turbines | N | P | P |
| Accessory buildings: | | | |
| Carport | N | P Minimum 5' | P Minimum 5' |
| Coop | N | N | P Minimum 5' |
| Doghouse | N | P Minimum 5' | P Minimum 5' |
| Garages, detached | N | P Minimum 5' | P Minimum 5' |
| Greenhouses | N | P Minimum 5' | P Minimum 5' |
| Pen | N | N | P Minimum 5' |
| Sheds | N | P Minimum 5' | P Minimum 5' |
| Storage buildings | N | P Minimum 5' | P Minimum 5' |

CROSSROADS CORPORATE CENTER

SUGAR GROVE, ILLINOIS



Scale: 1" = 2500'
Date: 12.05.2018
Rev: 12.26.2018

Site Plan and Base Plans are prepared by Kalkreuth and Harris Architects.

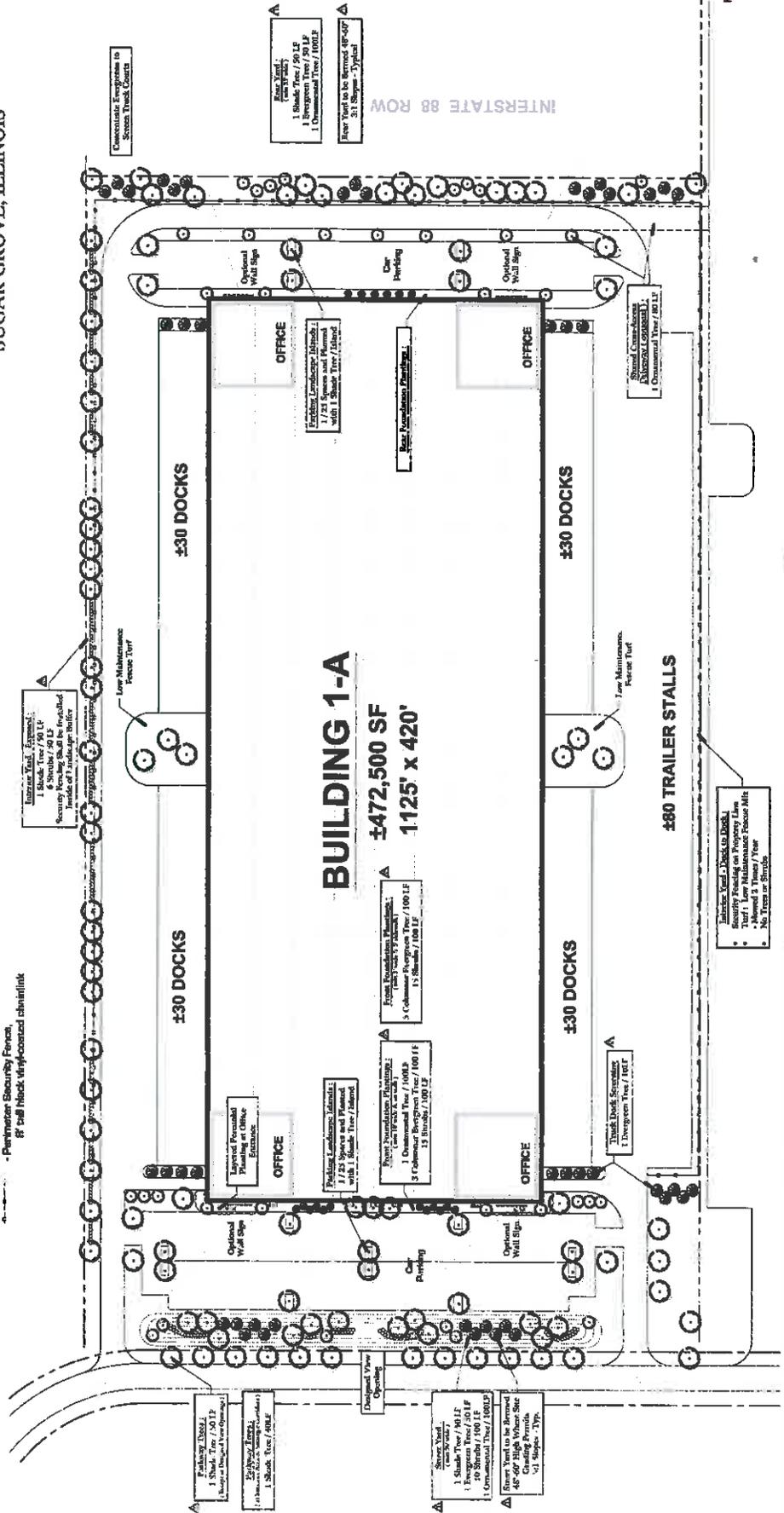
PROTOTYPICAL WAREHOUSE LANDSCAPE PLAN

CROSSROADS CORPORATE CENTER

SUGAR GROVE, ILLINOIS

PLAN LEGEND: A

- Parkway Trees, 2 1/2" Caliper
- Shade Tree, 2 1/2" Caliper
- Evergreen Tree, 8" Trif
- Columnar Evergreen, 8" Tall
- Ornamental Tree, 6" Tall or 2" Caliper
- Deciduous Shrub, 24" - 36" tall installed
- Spreading Juniper, 18" - 24" tall installed
- Perimeter Security Fence, 8' tall black vinyl-coated chainlink



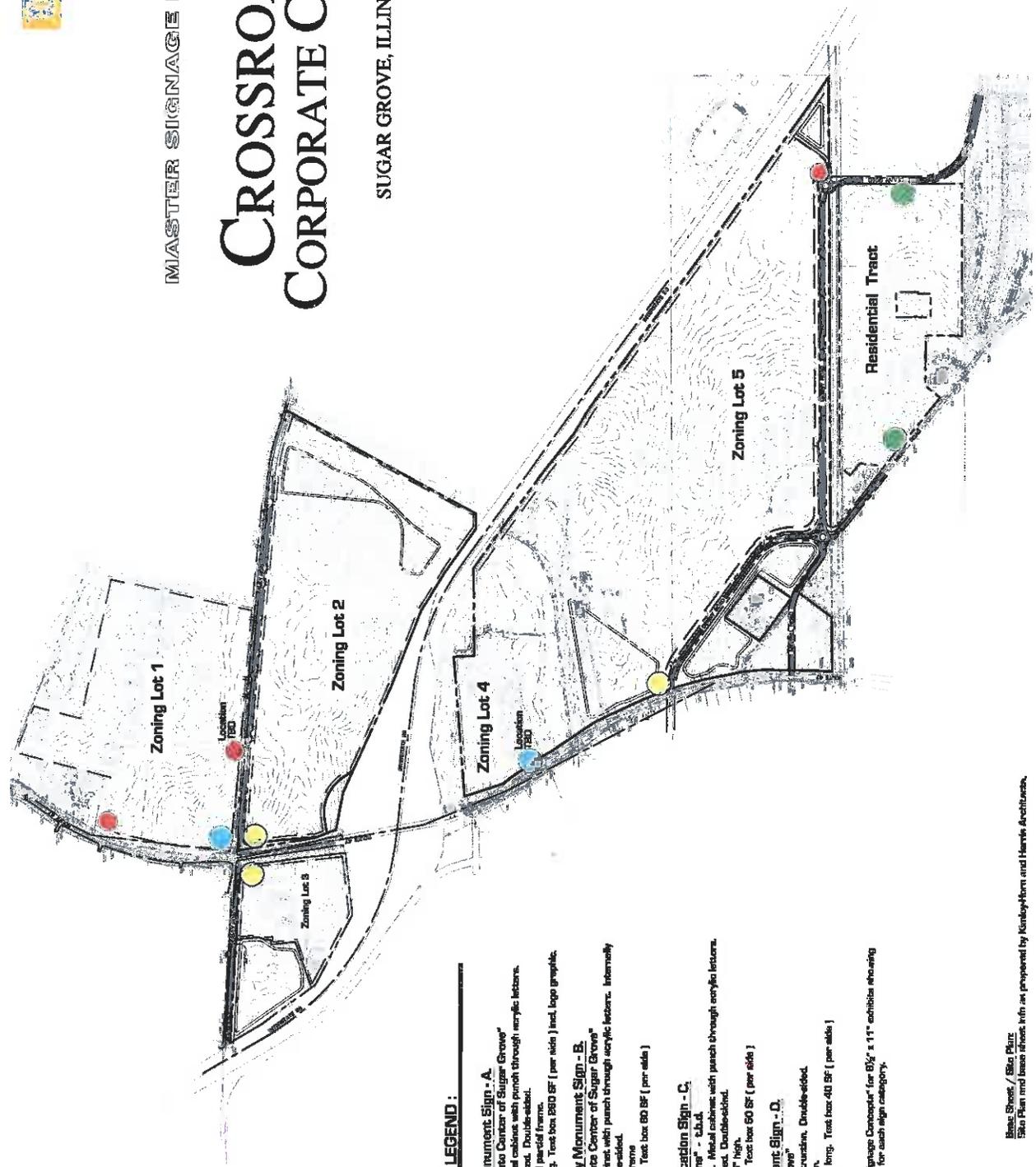
Scale: 1" = 60'
Date: 12.05.2018
Rev: 12.26.2018
Rev: 1.08.2019

CROSSROADS CORPORATE CENTER

SUGAR GROVE, ILLINOIS



scale: 1" = 5000'
date: 12.05.2018
rev: 12.26.2018



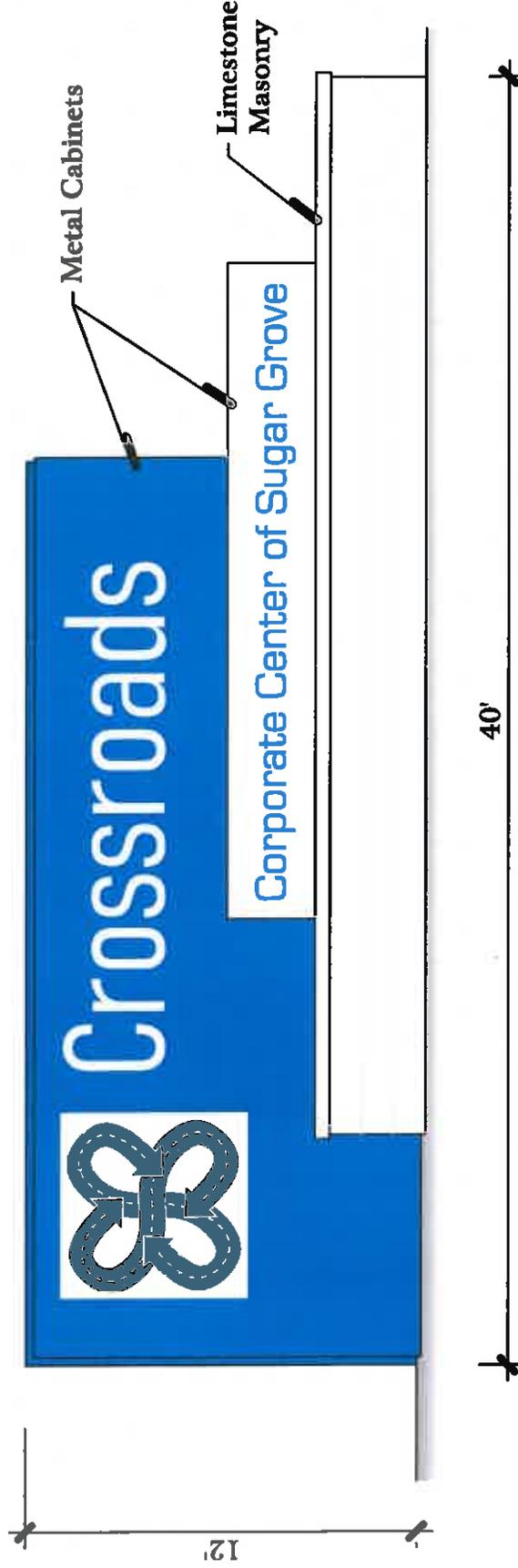
PROPOSED SIGNAGE LEGEND :

- **Industrial : Major Monument Sign - A**
"Crossroads Corporate Center of Sugar Grove"
 - Freestanding, illuminated cabinets with punch through acrylic letters.
 - Internally illuminated. Double-sided.
 - Masonry base and partial frame.
 - 12' high x 40' long. Text box 860 SF (per side) incl. logo graphic.
- **Industrial : Secondary Monument Sign - B**
"Crossroads Corporate Center of Sugar Grove"
 - Vertical cabinets with punch through acrylic letters. Internally illuminated. Double-sided.
 - Partial Masonry Frame.
 - 15' high x 6' wide. Text box 60 SF (per side)
- **Commercial : Identification Sign - C**
"Crossroads Commons" - 2,3,4,5
 - Vertical sign height. Metal cabinet with punch through acrylic letters.
 - Masonry base - 36" high.
 - 15' high x 6' wide. Text box 60 SF (per side)
- **Residential : Monument Sign - D**
"Avenue of Sugar Grove"
 - Freestanding, illuminated. Double-sided.
 - 6'10" high x 14'8" long. Text box 40 SF (per side)

Sign Elevations

- See "Monument Signage Concepts" for 6 1/2' x 11' exhibits showing preliminary design for each sign category.

These are preliminary renderings only. Color, Text and Layout may be adjusted at final design.



Sign is Double-Sided
Logo / Text Area - 260 SF
(per side)

Master Sign Exhibit
Crossroads Corporate Center
Sugar Grove, Illinois

Primary Monument Sign : CONCEPT A

These are preliminary renderings only. Color, Text and Layout may be adjusted at final design.

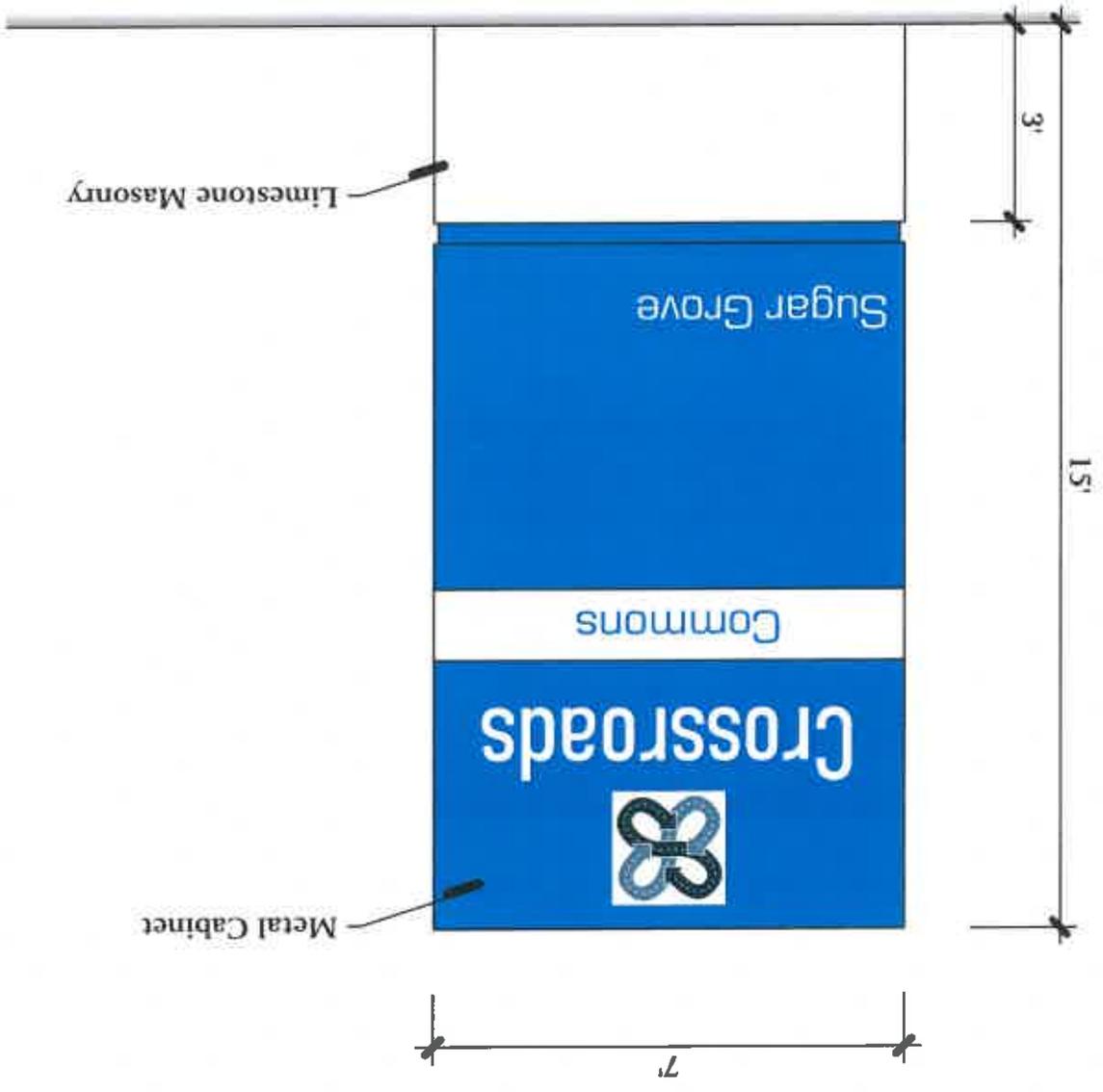


Secondary Monument Sign : CONCEPT B

Sign is Double-Sided
Logo / Text Area - 42 SF
(per side)

Master Sign Exhibit
Crossroads Corporate Center
Sugar Grove, Illinois

These are preliminary renderings only. Color, Text and Layout may be adjusted at final design.

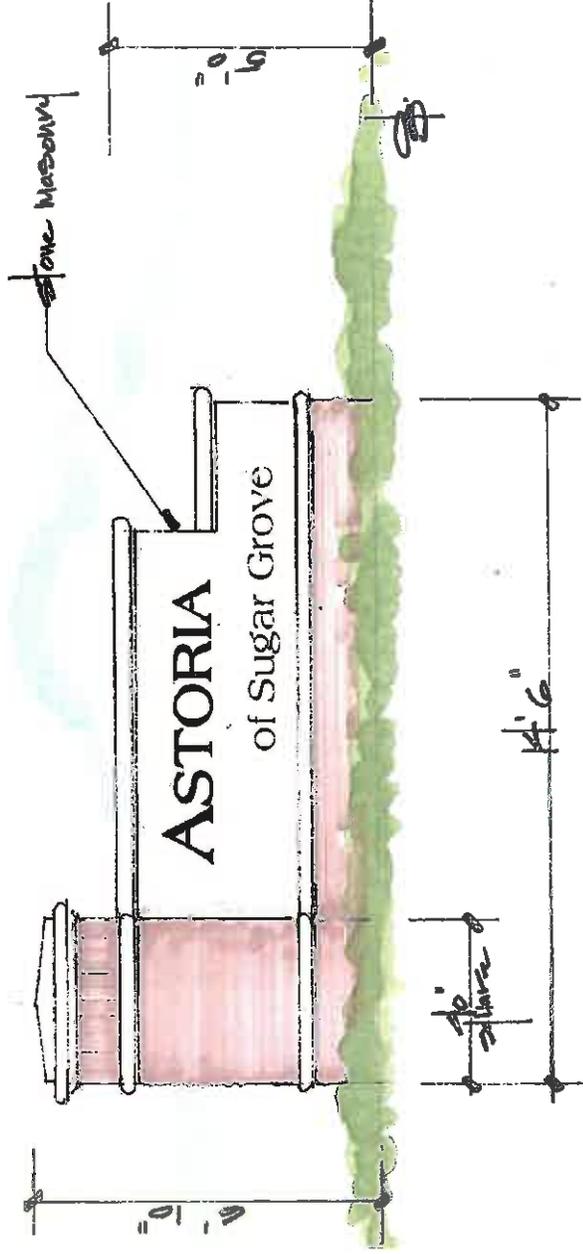


Commercial Identification Sign : CONCEPT C

Sign is Double-Sided
 Logo / Text Area - 50 SF
 (per side)

Master Sign Exhibit
 Crossroads Corporate Center
 Sugar Grove, Illinois

These are preliminary renderings only. Color, Text and Layout may be adjusted at final design.



Sign is Double-Sided
Text Area - 40 SF
(per side)

Master Sign Exhibit
Crossroads Corporate Center
Sugar Grove, Illinois

Residential Monument Sign : CONCEPT D



Land Planning
Landscape Architecture
Environmental Site Design

PROJECT:

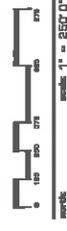
Grossroads Corporate Center

Sugar Grove, Illinois

DATE: 08/20/2018

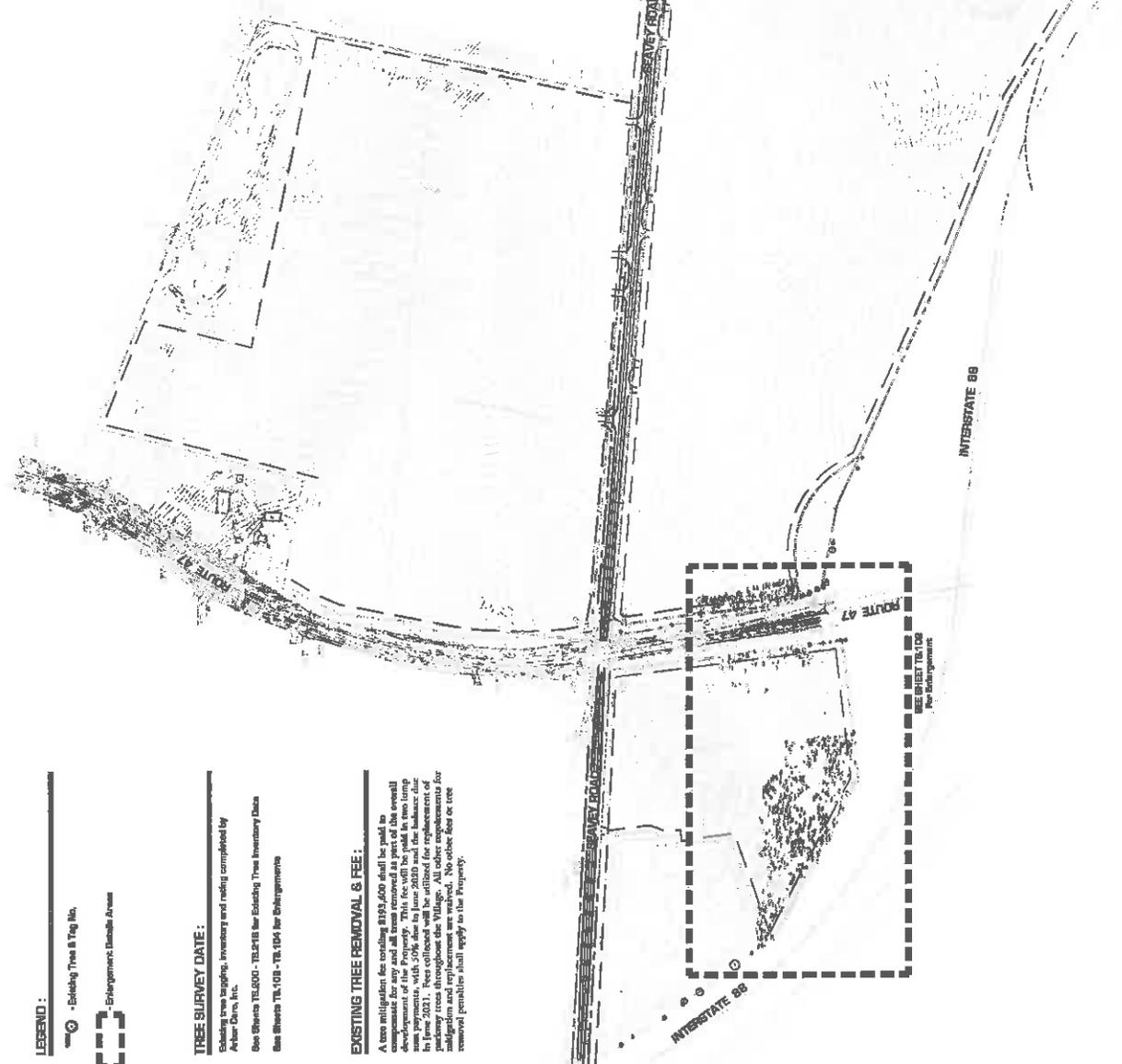
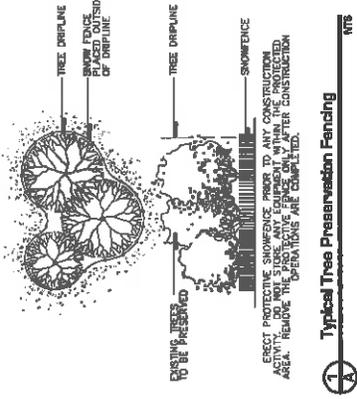
Existing Tree Survey NORTH

SCALE:



| | |
|------------------|-----------------------------|
| DATE: | 08/20/2018 |
| PROJECT: | Grossroads Corporate Center |
| PROJECT NO.: | 280712 |
| DATE OF ISSUE: | 8 December 2018 |
| DESIGNED BY: | |
| CHECKED BY: | |
| PROJECT MANAGER: | |

TS.100



LEGEND :

- Existing Tree & Tag No.
- Engagement Double Areas

TREE SURVEY DATE :

Existing tree tagging, inventory and rating completed by
Arbor Data, Inc.
See Sheets TS.000 - TS.018 for Existing Tree Inventory Data
See Sheets TS.100 - TS.104 for Submittals

EXISTING TREE REMOVAL & FEE :

A tree mitigation fee totaling \$150,000 shall be paid to the City of Sugar Grove for the removal of all existing trees within the project boundary. This fee will be paid in two lump sum payments, with 50% due by June 2020 and the balance due by June 2021. Fees collected will be utilized for the replacement of existing trees and mitigation of the landscape. No other fee or fee removal penalties shall apply to the Property.



Land Planning
Landscape Architecture
Environmental Site Design

1000 W. WASHINGTON ST., SUITE 200, CHICAGO, IL 60606

**Crossroads
Corporate
Center**

Sugar Grove, Illinois

DATE: 12/03/18

**Existing Tree
Survey
Enlargement**

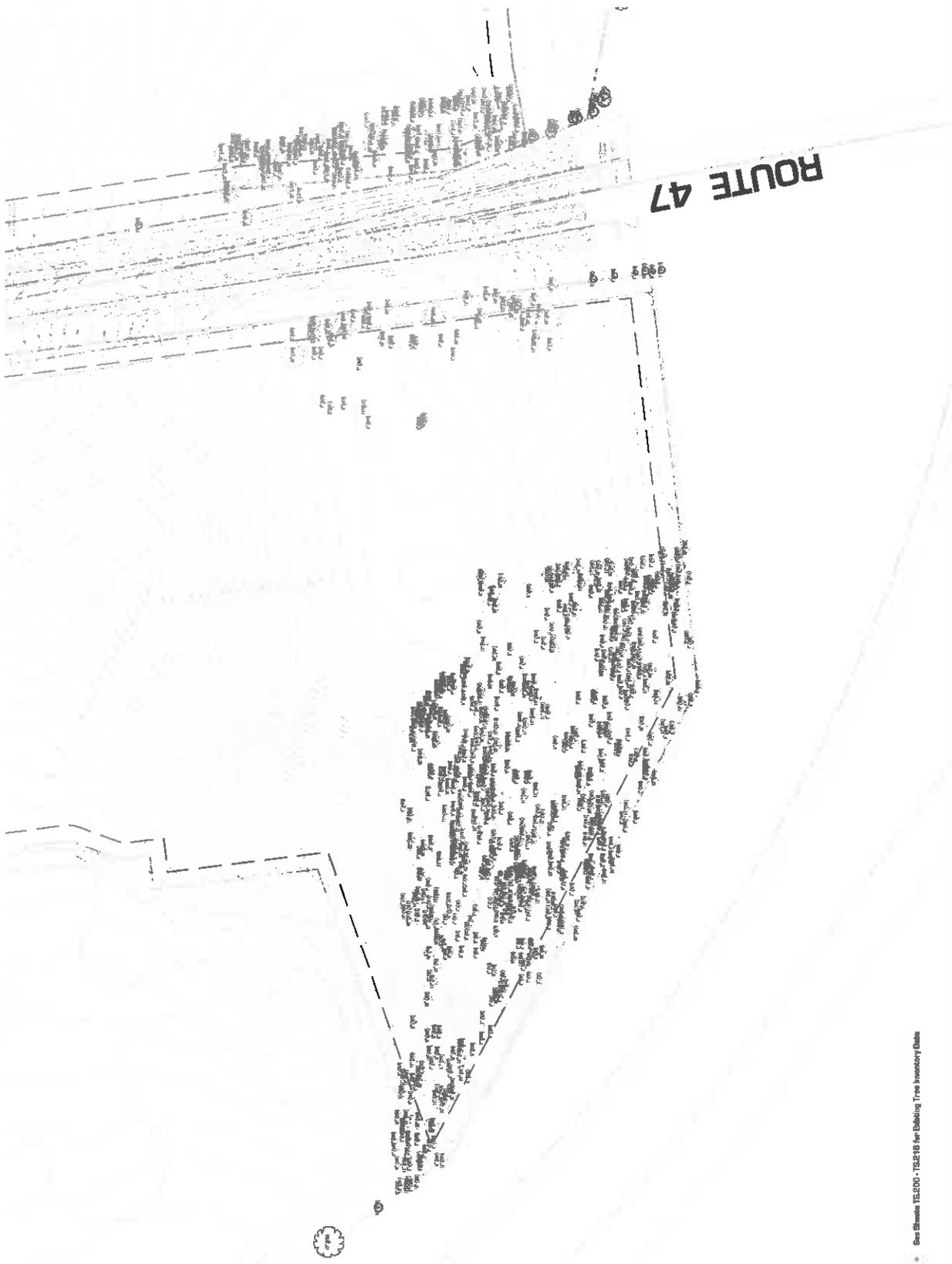


SCALE: 1" = 70.0'

| | |
|--------------|-----------------|
| DATE: | |
| BY: | |
| CHECKED BY: | |
| APPROVED BY: | |
| PROJECT NO.: | 200712 |
| ISSUE DATE: | 3 December 2018 |
| ISSUE NO.: | |
| ISSUE BY: | |
| ISSUE FOR: | |

PROJECT NO. 200712
ISSUE DATE: 3 December 2018
ISSUE NO. _____
ISSUE BY _____
ISSUE FOR _____

TS.102



See Sheets TS.200 - TS.216 for Existing Tree Inventory Data



Land Planning
Landscape Architecture
Environmental Site Design

1000 W. 10th Street, Suite 100, Ames, IA 50010
515.281.1111

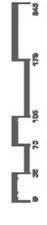
Project:

**Crossroads
Corporate
Center**

Sugar Grove, Illinois

Sheet description:

**Existing Tree
Survey
Enlargement**



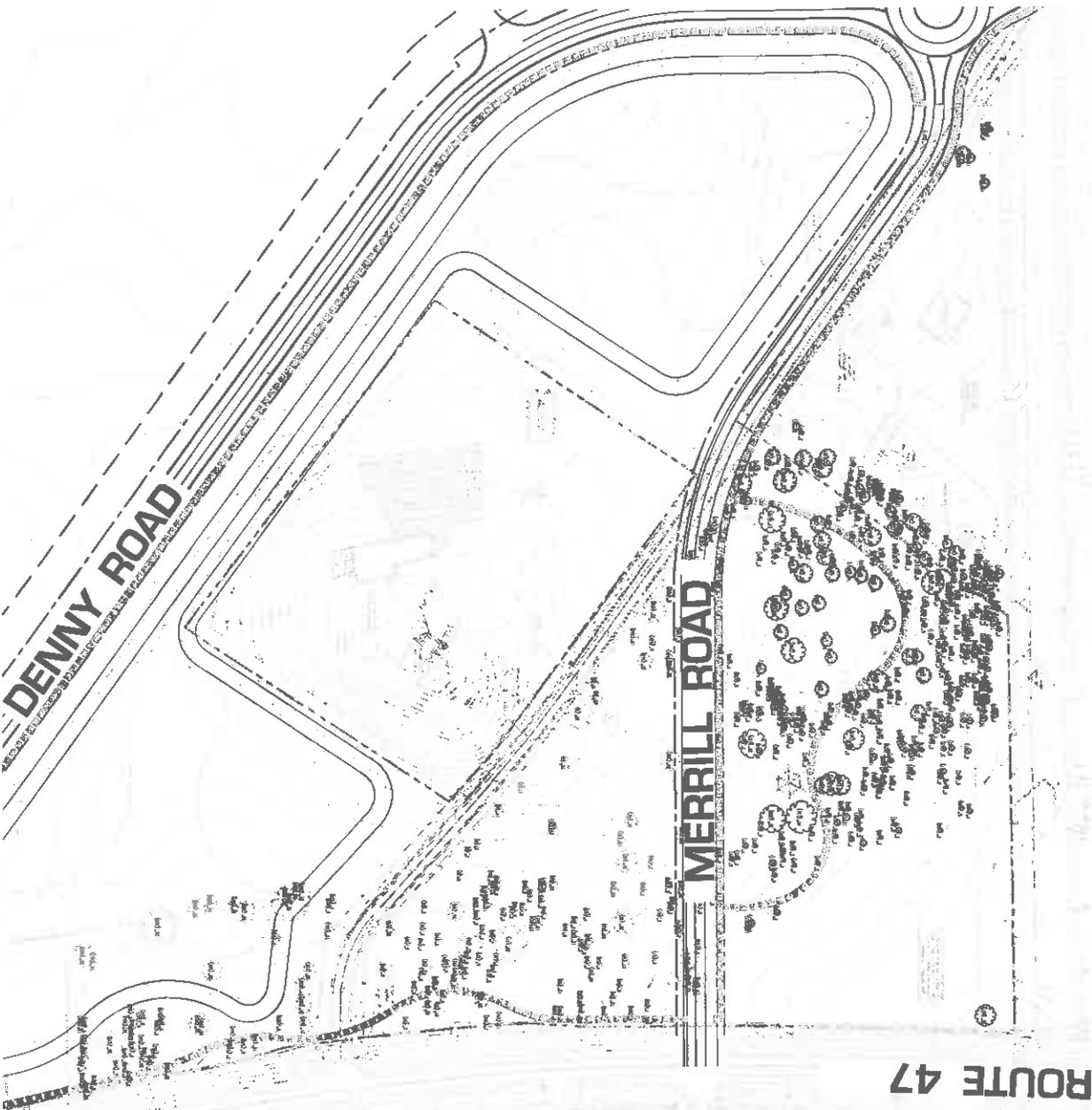
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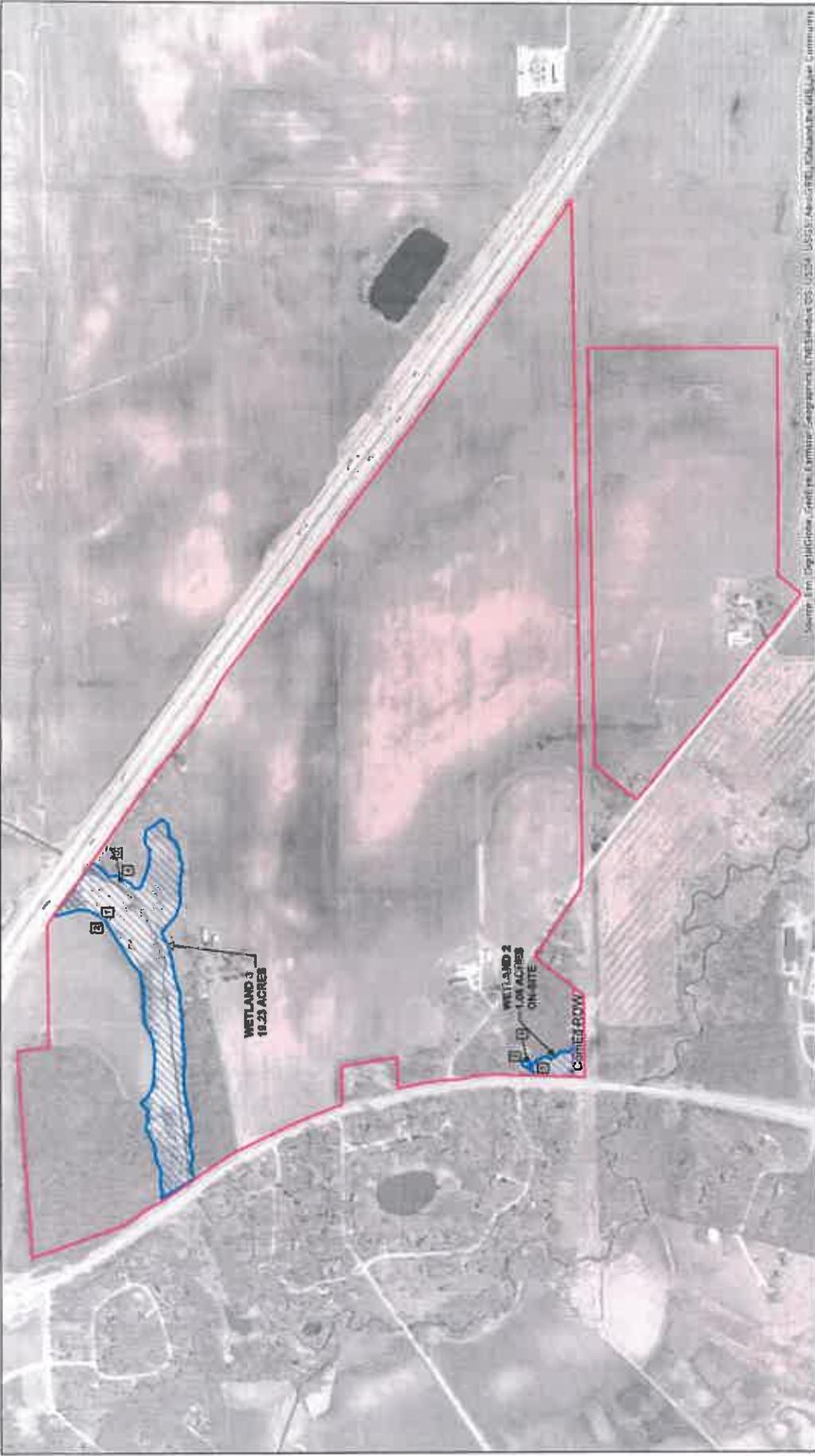
Revision:
original issue date: 5 December 2018

Drawn by:
Checked by:
Project No.: 28012
Sheet Title:

TS.104



• See Sheets TS.300 - TS.610 for Existing Tree Inventory Data



Source: 3m DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, SITA, Google, E-MapBox

Project Name: Sugar Grove South
 Prepared for: Sugar Grove, LLC
 Date: 8/15/2018

Scale: 1" = 100 Feet
 Project Number: 18-007

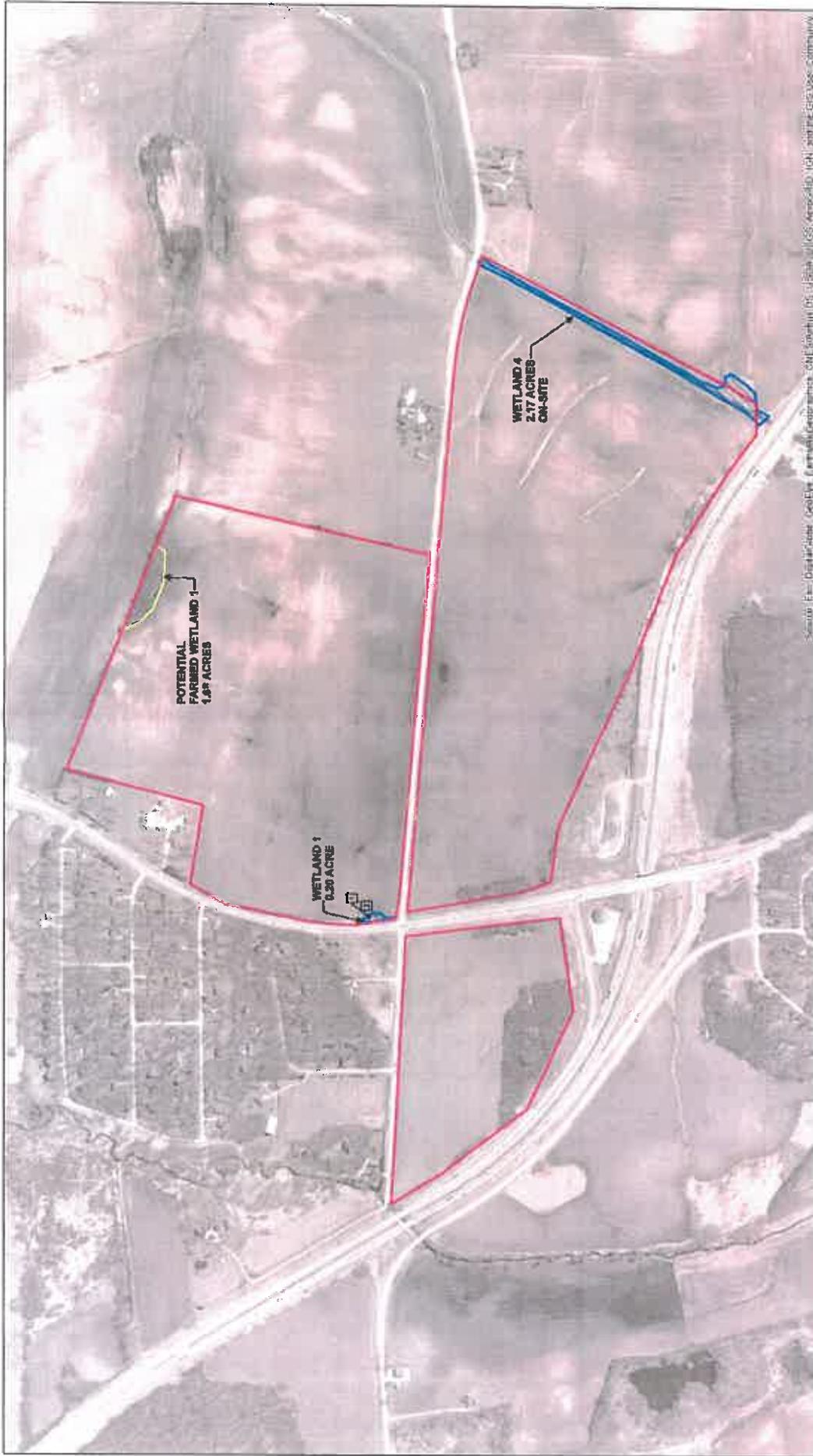
Prepared by: Hey and Associates, Inc.
 20000 Hwy 5, Collegeville, MN 56116

Legend:
 Data Point
 Wetland Boundary
 Project Boundary

Project Name: Sugar Grove South
 Prepared for: Sugar Grove, LLC
 Date: 8/15/2018

Scale: 1" = 100 Feet
 Project Number: 18-007

Prepared by: Hey and Associates, Inc.
 20000 Hwy 5, Collegeville, MN 56116



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNR Aero/Imagery Solutions, USDA, AeroGRID, IGN, and the GIS User Community

Project Name: Sugar Grove North
Prepared For: Sugar Grove, LLC
Project Number: 18-0082
Scale: 1" = 800 Feet
Date: 8/15/2018
Author: 2018
Editor: Wetland Boundary
Exhibit: 8

Legend:
 North Arrow
 Potential Farmed Wetland
 Wetland Boundary
 Project Boundary

Prepared By:
Hcy and Associates, Inc.
 Engineering, Geology and Landscape Architecture

THE CROSSINGS DEVELOPMENT

Traffic Impact Study

Sugar Grove, Illinois

December 2018

Prepared for:
Crown Community Development

Kimley»Horn



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DRAFT

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EXECUTIVE SUMMARY

Kimley-Horn was retained by Crown Community Development to prepare a traffic impact study for a proposed mixed-use development in Sugar Grove, Illinois. The subject site encompasses approximately 760 acres north and south of the Interstate 88 (I-88) interchange with IL Route 47. The initial phase of development, referred to as Phase A, includes approximately 4,062,225 square feet of industrial warehouse/distribution use. Phase A would encompass approximately 335 acres of the subject property. The remaining 425 acres are anticipated to be developed with a mix of uses, including industrial warehouse/distribution, retail, and residential. Based on the current development plan, full buildout of the 760-acre property may include a total of approximately 8,084,125 square feet of industrial warehouse/distribution use, 149,000 square feet of retail space, and 177 residential units.

This traffic impact study evaluates existing and future traffic conditions for area intersections and the proposed site access driveways along IL Route 47; site access driveways proposed along Seavey Road and Denny Road were not included in the analysis. The cross-sections for Seavey Road and Denny Road were negotiated with the Village of Sugar Grove separate from this traffic impact study. Traffic conditions were evaluated along IL Route 47 at key intersections between Green Road and Old Oaks Road/College Drive.

This traffic impact study evaluates future Year 2030 traffic conditions with the development of Phase A. Based on the results of this analysis, infrastructure improvements to support Phase A access and the addition of site-generated traffic to the local roadway are recommended. Because additional infrastructure improvements may be needed to support continued traffic growth within the area, a preliminary analysis of Year 2040 traffic conditions was also provided in order to define potential impacts of future background traffic and site-generated traffic at full buildout. The improvements contemplated to support Year 2040 traffic conditions are considered preliminary; as the development plan is refined and background traffic volumes are realized, the Year 2040 analysis will be updated.

Several infrastructure improvements are currently planned within the study area in order to accommodate future traffic growth and development. This study referenced design plans for a full I-88 interchange with IL Route 47. In addition, a Phase I study for improvements to the IL Route 47 corridor within the study area was applied to the analysis of Year 2040 traffic conditions. In order to quantify the impact of site-generated traffic and identify mitigation measures needed to support the proposed development, the planned infrastructure improvements were included in the analysis of future traffic conditions.

With development of Phase A, a new site access roadway would be constructed in order to facilitate access to the industrial warehouse/distribution development in Zone E. The new roadway is proposed to align with Scott Road and extend east of IL Route 47 (referred to as Denny Road for the purposes of this study). In addition, Merrill Road would be realigned opposite South Thornapple Tree Road (referred to as Realigned Merrill Road for the purposes of this study). Realigned Merrill Road would provide for improved spacing distance from Scott Road and provide for channelization at the new four-leg intersection. The two roadways would intersect and form a roundabout east of IL Route 47 with Denny Road continuing to the east (referred to as Denny Road Extension for the purposes of this study) and Merrill Road continuing to the southeast (referred to as Merrill Road Existing for the

purposes of this study). The roundabout would facilitate reduced travel speeds and improved safety conditions. Denny Road Extension would be constructed along the southern boundary of Phase A in order to facilitate access to the industrial warehouse/distribution use and provide for regional connectivity to the area roadway network. Near its eastern terminus, a roundabout would be installed in order to reduce travel speeds, minimize cut-thru traffic in the residential neighborhood to the south, and provide a turnaround area for wayward trucks. A three-lane cross-section with a single travel lane in each direction is anticipated for Denny Road/Denny Road Extension. Truck and passenger vehicle access would be provided via both Denny Road and Realigned Merrill Road/Merrill Road.

Based on the projected future traffic volumes with background traffic growth and development of Phase A, a new traffic signal is anticipated to be warranted at the intersection of IL Route 47/I-88 Westbound Ramps and Scott Road/Denny Road. At the intersection of IL Route 47/I-88 Westbound Ramps, restriping of the east leg to facilitate dual left-turn lanes is anticipated. In order to facilitate site access via Denny Road, dedicated left-turn lanes are anticipated on the north and south legs of its intersection with IL Route 47. In addition, dedicated left-turn lanes are anticipated on the east and west legs. At the intersection of IL Route 47/Thornapple Tree Road/Realigned Merrill Road, dedicated left-turn lanes are anticipated on the north and south legs. A dedicated right-turn lane is also expected on the east leg. Additional details related to the improvements identified above are provided in the *Recommendations & Conclusion* section of this report.

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1. INTRODUCTION

Kimley-Horn was retained by Crown Community Development to perform a traffic impact study for a proposed mixed-use development in Sugar Grove, Illinois. The subject site is comprised of select parcels north and south of the Interstate 88 (I-88) interchange with IL Route 47. Between the I-88 interchange and Seavey Road, the subject site includes parcels on both the east and west sides of IL Route 47; north of Seavey Road, the subject site is located on the east side of IL Route 47 only. South of the I-88 interchange with IL Route 47, the subject site includes parcels located on the east side of IL Route 47 generally between Finley Road and Merrill Road. An aerial view of the study location and the surrounding roadway network is presented in **Exhibit 1**.

The conceptual development plan includes a total of 8,084,125 square feet of industrial warehouse/distribution use, 149,000 square feet of retail use, and 177 single-family residential units. The concept site plan is organized by development zone (Zone A to Zone F) based on geographic boundaries (e.g., roadways, wetlands), land use, and access. The proposed development is anticipated to be constructed in phases. As this development progresses, infrastructure improvements may be necessary in the relatively near term to facilitate site access and support the addition of site-generated traffic on the local roadway network. In order to quantify the impact of site-generated traffic, and to identify near-term infrastructure needs, this study evaluates the impact of Phase A under a Year 2030 build scenario. Because further infrastructure improvements may be needed to support continued traffic growth within the study area, a Year 2040 Build condition was also evaluated to analyze the impact of future background traffic and site-generated traffic at full buildout. **Table 1** summarizes the assumed phasing for the proposed development.

Table 1. Summary of Proposed Development

| Zone | Land Use | | |
|-------------------------|---------------------------------------|-------------------------|------------------------|
| | Industrial Warehouse (square feet) | Retail (square feet) | Residential (units) |
| Phase A | | | |
| Zone E | 4,062,225 | -- | -- |
| Subtotal Phase A | 4,062,225 | -- | -- |
| Phase B | | | |
| Zone A | 423,000 | -- | -- |
| Zone B | 1,634,900 | 56,660 | -- |
| Zone C | 1,964,000 | -- | -- |
| Zone D | -- | 92,340 | -- |
| Zone F | -- | -- | 177 |
| Subtotal Phase B | 4,021,900 | 149,000 | 177 |
| Total | 8,084,125 | 149,000 | 177 |

With development of Phase A, two new east-west roadways would be constructed to facilitate access to the industrial warehouse/distribution development. A new roadway is proposed to align with Scott Road and extend east of IL Route 47 (referred to as Denny Road for the purposes of this study). In addition, Merrill Road would be realigned opposite South Thornapple Tree Road (referred to as Realigned Merrill Road for the purposes of this study).



| LEGEND | |
|---------------------------------------|---------|
| ■ | Phase A |
| ■ | Phase B |

Access to Phase A and B would include site access driveways to IL Route 47. For purposes of this analysis, the proposed site access driveways along IL Route 47 were included as described below. Site access driveways to Zone E would be constructed as part of Phase A while site access driveways to Zone A, Zone B, Zone C, Zone D, and Zone F would be constructed as part of Phase B. Site access driveways proposed along Seavey Road and Denny Road were not included in the analysis.

- **Zone A** – A right-out (RO) access driveway to IL Route 47 (Access C) located approximately 220 feet south of Seavey Road.
- **Zone B** – A full-access driveway aligned opposite Oakleaf Drive (Access A) and a right-in/right-out (RIRO) access driveway (Access B) located approximately 640 feet south of Access A.
- **Zone C** – A right-in (RI) access driveway (Access D) would be provided approximately 500 feet south of Seavey Road.
- **Zone D** – A single full-access driveway (Access E) is assumed to be provided along IL Route 47 south of Finley Road.
- **Zone E** – Site access driveways would be provided along Denny Road. As described in the *Recommendations & Conclusion* section of this report, a three-lane cross-section with a single lane in each direction is recommended for Denny Road.

The residential component included in Zone F is assumed to be accessed via Merrill Road southeast roundabout recommended at Denny Road/Realigned Merrill Road/Merrill Road Existing. The site access details for Zone F are subject to change as the plan is further refined; therefore, the site access driveways for Zone F were not included in the analysis.

As a part of this study, the existing network was analyzed to determine the current operations at the study intersections. Site trip generation characteristics were established for each development phase and added to background traffic volumes in order to assess the site's impact on the area roadway network. This report presents and documents Kimley-Horn's data collection, summarizes the evaluation of traffic conditions on the surrounding roadways, identifies recommendations to mitigate operational issues, and details the potential impact of development traffic on the adjacent roadway network.

2. EXISTING CONDITIONS

Kimley-Horn conducted field observations to collect relevant information pertaining to the site, existing land uses in the surrounding area, current traffic volumes and operational conditions, lane configurations and traffic controls, and other key roadway characteristics. A detailed account of this information and findings are provided below.

2.1. Existing Land Uses

The subject site is located in Sugar Grove, Illinois and is comprised of parcels north and south of the I-88 interchange with IL Route 47. Between the I-88 interchange and Seavey Road, the subject site includes parcels on both the east and west sides of IL Route 47; north of Seavey Road, the subject site is located on the east side of IL Route 47 only. South of the I-88 interchange with IL Route 47, the subject site includes parcels located on the east side of IL Route 47 generally between Finley Road and Merrill Road.

The subject site is currently undeveloped agricultural land. The west side of IL Route 47 is currently developed with single-family residential uses. Waubensee Community College is located on the east side of IL Route 47 less than one and one-half miles south of the I-88 interchange. Regional access to the subject property and surrounding area is provided via Interstate 88, which currently provides a partial interchange with IL Route 47.

2.2. Existing Roadway Characteristics

Based on a field investigation within the study area, the following information was obtained about the existing roadway network.

Illinois Route 47 (IL Route 47) is a north-south roadway which provides access to the subject property. IL Route 47 is classified as a Strategic Regional Arterial (SRA) by the Illinois Department of Transportation (IDOT). IDOT's SRA system is designed to promote mobility on key routes throughout Chicagoland with the use of such strategies as access control and limited signalization. Through the study area, IL Route 47 provides a single travel lane in each direction. At the existing partial interchange with I-88, a westbound on-ramp and an eastbound off-ramp are provided. A single travel lane is provided on each ramp. The IL Route 47 overpass extends above I-88 and provides two travel lanes in each direction with a center median. A dedicated left-turn lane is provided on IL Route 47 at the I-88 Westbound On-Ramp. The I-88 Eastbound Off-Ramp is under minor-leg stop-control and includes a channelized right-turn lane with storage for approximately one vehicle. At its signalized intersection with Old Oaks Road/College Drive, IL Route 47 provides a dedicated left-turn lane, one through lane, and one shared through/right-turn lane on the north leg. On the south leg, IL Route 47 provides a dedicated left-turn lane, two through lanes, and a dedicated right-turn lane. Through the study area, the posted speed limit on IL Route 47 is 55 miles per hour (MPH). For purposes of this analysis, a speed limit of 35 MPH was assumed for the I-88 on- and off-ramps. IL Route 47 is under IDOT jurisdiction.

Green Road is an east-west local road located north of the subject site. Green Road provides a single travel lane in each direction. At its unsignalized T-intersection with IL Route 47, Green Road provides

a single shared left- and right-turn lane. There is no posted speed limit on Green Road; for purposes of this analysis, a 50 MPH speed limit was assumed. Green Road is under the jurisdiction of the Blackberry Township.

Seavey Road is an east-west local road located north of the I-88 interchange with IL Route 47. East of IL Route 47, Seavey Road is a gravel road with a single travel lane in each direction. West of IL Route 47, a portion of Seavey Road is paved with a single travel lane in each direction. At its intersection with IL Route 47, Seavey Road operates under minor-leg stop-control and provides a single shared lane on the east and west legs. A 30 MPH speed limit is posted on Seavey Road east of IL Route 47. West of IL Route 47, a speed limit is not posted; for purposes of this analysis, a 30 MPH speed limit was assumed. Seavey Road is under the jurisdiction of Blackberry Township.

Finley Road is an east-west local road which extends west of IL Route 47. Finley Road provides a single travel lane in each direction. At its T-intersection with IL Route 47, Finley Road provides a single shared left- and right-turn lane and operates under minor-leg stop-control. There is no posted speed limit on Finley Road; for purposes of this analysis, a 25 MPH speed limit was assumed. Near its intersection with IL Route 47, Finley Road is under the jurisdiction of Blackberry Township.

Thornapple Tree Road is an east-west local loop roadway located on the west side of IL Route 47. Its northern T-intersection with IL Route 47 is located north of Scott Road, and its southern T-intersection is located south of Merrill Road. Thornapple Tree Road provides one travel lane in each direction. There is no posted speed limit on Thornapple Tree Road; for purposes of the analysis, a 25 MPH speed limit was assumed. At each T-intersection with IL Route 47, Thornapple Tree Road provides a single lane in each direction and operates under minor-leg stop control. Thornapple Tree Road is under the jurisdiction of Sugar Grove Township.

Scott Road is an east-west Major Collector roadway which extends west of IL Route 47. Scott Road provides one travel lane in each direction. At its T-intersection with IL Route 47, Scott Road provides a shared left- and right-turn lane and operates under minor-leg stop-control. The posted speed limit on Scott Road is 25 MPH. Near its intersection with IL Route 47, Scott Road is under the jurisdiction of Blackberry Township.

Merrill Road is an east-west Major Collector roadway that extends east of IL Route 47 south of the subject site. Merrill Road provides a single travel lane in each direction. The posted speed limit on Merrill Road is 45 MPH. At its T-intersection with IL Route 47, Merrill Road provides a single lane in each direction and operates under minor-leg stop-control. Merrill Road is under the jurisdiction of Sugar Grove Township.

Old Oaks Road is a local east-west roadway which extends west of IL Route 47 and is aligned opposite College Drive. A single travel lane is provided in each direction. At its signalized intersection with IL Route 47, Old Oaks Road provides a dedicated left-turn lane and a shared through/right-turn lane. There is no posted speed limit on Old Oaks Road; for purposes of the analysis, a 25 MPH speed limit was assumed. Old Oaks Road is under the jurisdiction of Sugar Grove Township.

College Drive is an east-west private roadway located south of the subject site. College Drive extends east of IL Route 47 and is aligned opposite Old Oaks Road. College Drive provides a single

travel lane in each direction. At its signalized intersection with IL Route 47, College Drive provides a dedicated left-turn lane and one shared through/right-turn lane. The posted speed limit on College Drive is 20 MPH; however, based on limitations of the capacity analysis, a 25 MPH speed limit was assumed.

2.3. Traffic Count Data

Turning movement count data was collected for the weekday peak periods in June 2018 at the intersections listed below. Counts were conducted on a typical weekday from 7:00 to 9:00AM and from 4:00 to 6:00PM in order to capture peak travel periods in the vicinity of the proposed development.

- IL Route 47 / Green Road
- IL Route 47 / Seavey Road
- IL Route 47 / I-88 WB On-Ramp
- IL Route 47 / I-88 EB Off-Ramp
- IL Route 47 / Finley Road
- IL Route 47 / Scott Road
- IL Route 47 / South Thornapple Tree Road
- IL Route 47 / Merrill Road
- IL Route 47 / Old Oaks Road / College Drive

The resulting count data reveals that peak traffic volumes occur within the study area on weekdays from 7:30 to 8:30AM and 5:00 to 6:00PM. The existing peak hour volumes were rounded to the nearest multiple of five and balanced between intersections. Existing peak hour vehicle traffic volumes are presented in **Exhibit 2**. A summary of the traffic count data is provided in the appendix.

Weekday count data reveals that volumes along IL Route 47 are generally evenly distributed during the morning and evening peak hours. Similarly, traffic volumes on Green Road, Finley Road, Merrill Road, Thornapple Tree Road, and Old Oaks Road are generally evenly distributed during the peak hours. Traffic volumes on Scott Road are generally higher in the eastbound direction during the morning peak hour as compared to the westbound direction. During the evening peak hour, traffic volumes on Scott Road are generally evenly distributed in the eastbound and westbound directions.

2.4. Existing Levels of Service

Traffic volume data was analyzed with Synchro capacity analysis software in order to determine the quality of operation in the existing network. Operation is characterized according to the amount of control delay at each intersection approach and quantified into a level of service (LOS). The LOS grades shown below, which are provided in the Transportation Research Board's Highway Capacity Manual (HCM), quantify and categorize a driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. LOS D is typically the minimum acceptable LOS accepted by agencies in Northeastern Illinois (including IDOT), and a minimum LOS C is required for through movements on SRA routes such as IL Route 47. A detailed description of each LOS rating can be found in **Table 2**.

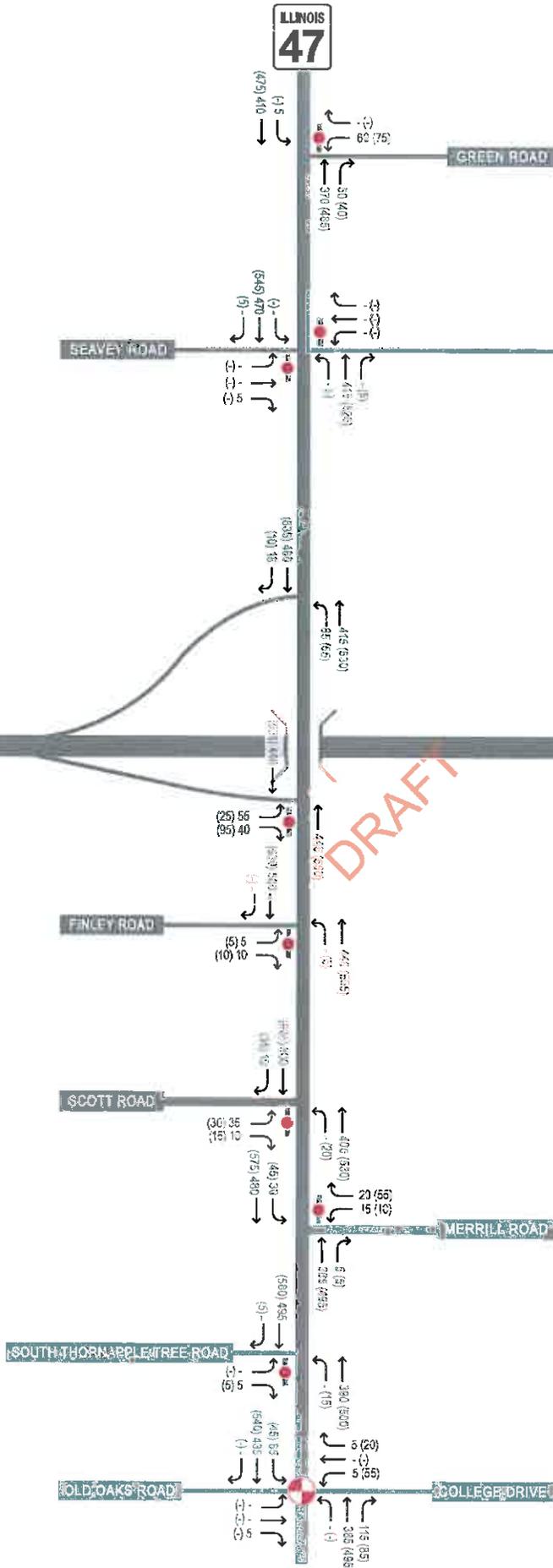


Table 2. Level of Service Grading Descriptions¹

| Level of Service | Description |
|------------------|--|
| A | Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream. |
| B | Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream. |
| C | Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds. |
| D | Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease. |
| E | High control delay; average travel speed no more than 33 percent of free flow speed. |
| F | Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow. |

¹Highway Capacity Manual 2010

Table 3 presents the range of control delay for each LOS rating as detailed in the HCM. Because signalized intersections are expected to carry a larger volume of vehicles and stopping is required during red time, note that higher delays are tolerated for the corresponding LOS ratings.

Table 3. Level of Service Grading Criteria¹

| Level of Service | Average Control Delay (s/veh) at: | |
|------------------|-----------------------------------|--------------------------|
| | Unsignalized Intersections | Signalized Intersections |
| A | 0 – 10 | 0 – 10 |
| B | > 10 – 15 | > 10 – 20 |
| C | > 15 – 25 | > 20 – 35 |
| D | > 25 – 35 | > 35 – 55 |
| E | > 35 – 50 | > 55 – 80 |
| F ² | > 50 | > 80 |

¹Highway Capacity Manual 2010

²All movements with a Volume to Capacity (v/C) ratio greater than 1 receive a rating of LOS F.

Based on these standards, capacity results were identified for the study intersections under existing conditions. At the intersection of IL Route 47/Old Oaks Road/College Drive, the traffic signal is currently running “free” and is not on an interconnected signal system. In order to evaluate traffic conditions and reflect the responsive nature of the signal cycles, the signal was optimized with an assumed minimum cycle length of 90 seconds. Per IDOT requirements, right-turn-on-red (RTOR) movements were not included in the analysis. Although a 20 MPH speed limit is posted on College Drive, the HCM 2010 analysis supports a minimum speed limit of 25 MPH; therefore, a 25 MPH speed limit was applied to College Drive.

Level of service data for the study intersections is reported in **Table 4**. For each study intersection, the results are based on Synchro’s HCM 2010 reports, copies of which are provided in the Appendix. In this table, operation on each approach is quantified according to the average delay per vehicle and the corresponding level of service. Overall intersection operation is reported for the signalized intersection only.

Table 4. Existing (2018) Levels of Service

| Intersection | | AM Peak Hour | | PM Peak Hour | |
|---|-------------------|---------------|-----|---------------|-----|
| | | Delay (s/veh) | LOS | Delay (s/veh) | LOS |
| IL Route 47 / Green Road | △ | | | | |
| | Westbound | 19 | C | 25+ | D |
| | | 8 | A | 9 | A |
| IL Route 47 / Seavey Road | △ | | | | |
| | Eastbound | 15- | B | 20 | C |
| | Westbound | 15+ | C | 20 | C |
| | Northbound (Left) | 8 | A | 9 | A |
| | | 8 | A | 9 | A |
| IL Route 47 / I-88 EB Off-Ramp | △ | 17 | C | 10- | A |
| IL Route 47 / Finley Road | △ | | | | |
| | Eastbound | 14 | B | 17 | C |
| | | 9 | A | 9 | A |
| IL Route 47 / Scott Road | △ | | | | |
| | Eastbound | 18 | C | 25- | C |
| | | 9 | A | 9 | A |
| IL Route 47 / Merrill Road | △ | | | | |
| | Westbound | 15- | B | 15+ | C |
| | | 8 | A | 9 | A |
| IL Route 47 / South Thornapple Tree Road | △ | | | | |
| | Eastbound | 13 | B | 14 | B |
| | | 9 | A | 9 | A |
| IL Route 47 / Old Oaks Road / College Drive | * | | | | |
| | Eastbound | 23 | C | 23 | C |
| | Westbound | 22 | C | 21 | C |
| | Northbound | 6 | A | 7 | A |
| | Southbound | 6 | A | 7 | A |
| Intersection | | 6 | A | 8 | A |

* – Signalized Intersection △ – Minor-Leg Stop-Controlled Intersection

As shown in Table 4, the northbound and southbound approaches and movements along IL Route 47 are currently operating at LOS A during each peak hour. The eastbound and westbound approaches are operating at LOS D or better during each peak hour. The 95th percentile queues estimated for the turn movements at the unsignalized intersections are approximately one vehicle or less during each peak hour. At the signalized intersection of IL Route 47/Old Oaks Road/College Drive, the 95th percentile queues are currently accommodated within the existing storage lanes. The 95th percentile queue estimated for the northbound right-turn lane is approximately two vehicles (50 feet) or less during each peak hour. The 95th percentile queues estimated for the northbound and southbound left-turn lanes are approximately one vehicle (25 feet) or less during each peak hour.

3. FUTURE DEVELOPMENT CONDITIONS

This section of the report outlines the proposed development plan, summarizes site-specific traffic characteristics, develops future traffic projections for analysis, and presents the results of the future capacity analysis.

3.1. Development Characteristics & Site Access

The initial phase of The Crossings comprises approximately 335 acres on the northeast quadrant of IL Route 47/South Thornapple Tree Road (referred to as Zone E). The development plan of Zone E includes a total of approximately 4,062,225 square feet of industrial warehouse/distribution use, which would be constructed as Phase A. Full buildout of the remaining 425 acres (Zones A-D and Zone F) is anticipated to be constructed in phases; the development plan contemplated for Phase B is discussed in *Section 4. Future Concept Conditions*. A conceptual site plan is provided in the Appendix.

With development of Phase A, a new site access roadway would be constructed in order to facilitate access to the industrial warehouse/distribution development in Zone E. The new roadway is proposed to align with Scott Road and extend east of IL Route 47 (referred to as Denny Road for the purposes of this study). Merrill Road would be realigned opposite South Thornapple Tree Road (referred to as Realigned Merrill Road for the purposes of this study).

Denny Road and Realigned Merrill Road would intersect and form a roundabout east of IL Route 47 with Denny Road continuing to the east (referred to as Denny Road Extension for the purposes of this study) and Merrill Road continuing to the southeast (referred to as Merrill Road Existing for the purposes of this study). As discussed in the *Recommendations & Conclusion* section of this report, a roundabout is recommended at this intersection in order to enhance safety conditions and reduce travel speeds.

As part of development of Phase A, Denny Road Extension would be constructed across the southern boundary of Zone E. Denny Road Extension would facilitate access to Zone E and provide regional connectivity to the area roadway network. Near its eastern terminus, a roundabout would be installed on Denny Road Extension in order to reduce travel speeds, minimize cut-thru traffic in the future residential neighborhood to the south (Zone F), and provide a turnaround area for wayward trucks.

Truck access to the industrial warehouse/distribution uses included in Phase A would be provided via Denny Road/Denny Road Extension only; trucks would be prohibited on Realigned Merrill Road and Merrill Road Existing. Passenger vehicle access would be permitted via both Denny Road and Realigned Merrill Road.

3.2. Trip Generation, Distribution, & Assignment

In order to calculate site-generated traffic projections for the site, data was referenced from the Institute of Transportation Engineers (ITE) manual Trip Generation, Tenth Edition. Trip generation data for the ITE Land Use Code (LUC) corresponding to the proposed uses are shown in **Table 5**. Where provided, the trip generation formula was assumed. A copy of ITE data is provided in the

Appendix.

Table 5. ITE Trip Generation Data by Land Use

| ITE Land Use / Unit | Unit | Type | Weekday | | |
|--|-------------------|-----------------------------|--------------------------|--------------------------|--------------------------|
| | | | Daily | AM Peak | PM Peak |
| High-Cube Transload and Short-Term Storage Warehouse (LUC 154) | Per 1,000 sq. ft. | Passenger Vehicles | 0.946X 50% in/50% out | 0.056X 77% in/23% out | 0.077X 28% in/72% out |
| | | Heavy Vehicles ¹ | 0.454X 50% in/50% out | 0.024X 77% in/23% out | 0.023X 28% in/72% out |

T – Site-generated trips X – 1,000 square feet gross floor area

¹ The ITE Trip Generation, Tenth Edition manual does not provide data for heavy vehicles. Per guidance provided in the ITE manual for LUC 154, data provided in the *High-Cube Warehouse Vehicle Trip Generation Analysis*, published in October 2016 was assumed. Tables 5-7 of the *High-Cube Warehouse Vehicle Trip Generation Analysis* outline the daily and peak hour trip generation rates for heavy vehicles. A copy of the supplemental data is provided in the appendix. The in/out distribution percentages were obtained from the Trip Generation, Tenth Edition manual.

The site-generated trips generated during the peak hour were rounded to the nearest multiple of five for the purposes of this analysis, and daily trips were rounded to the nearest multiple of ten. A summary of projected site trips is provided in Table 6.

Table 6. Site-Generated Traffic Projections¹

| Land Use | Size | Type | Daily | Weekday | | | | | |
|--|-------------------|----------------|--------------|------------|-----------|------------|------------|------------|------------|
| | | | | AM Peak | | | PM Peak | | |
| | | | | In | Out | Total | In | Out | Total |
| Phase A | | | | | | | | | |
| High-Cube Transload and Short-Term Storage Warehouse (LUC 154) | 4,062,225 sq. ft. | Passenger Cars | 3,840 | 175 | 50 | 225 | 90 | 225 | 315 |
| | | Heavy Vehicles | 1,840 | 75 | 20 | 95 | 25 | 70 | 95 |
| Total (Phase A) | | | 5,680 | 250 | 70 | 320 | 115 | 295 | 410 |

¹In/Out volumes are rounded to the nearest multiple of five. For rounding purposes, the total volumes are a sum of in and out trips.

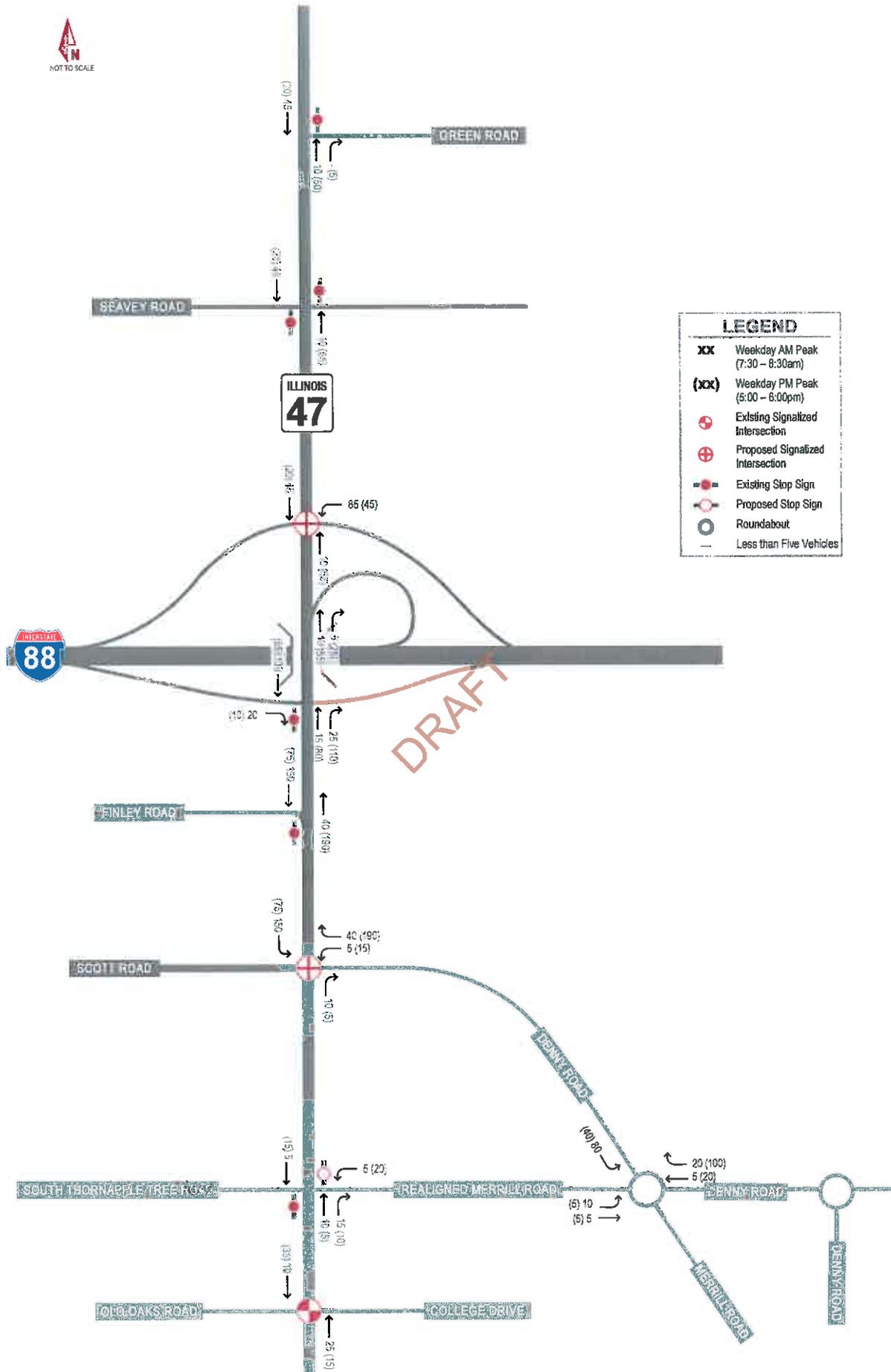
The distribution of site-generated truck traffic was based on prevailing truck traffic volumes/patterns and the planned I-88 interchange improvements at IL Route 47. The distributions estimated for passenger vehicle traffic are based on a number of factors, including the nature of surrounding land uses, prevailing traffic volumes/patterns, characteristics of the street system, and the ease with which motorists can travel over various sections of that system. The planned interchange improvements were also considered for the estimated passenger vehicle distributions. The estimated trip distributions are summarized in Table 7.

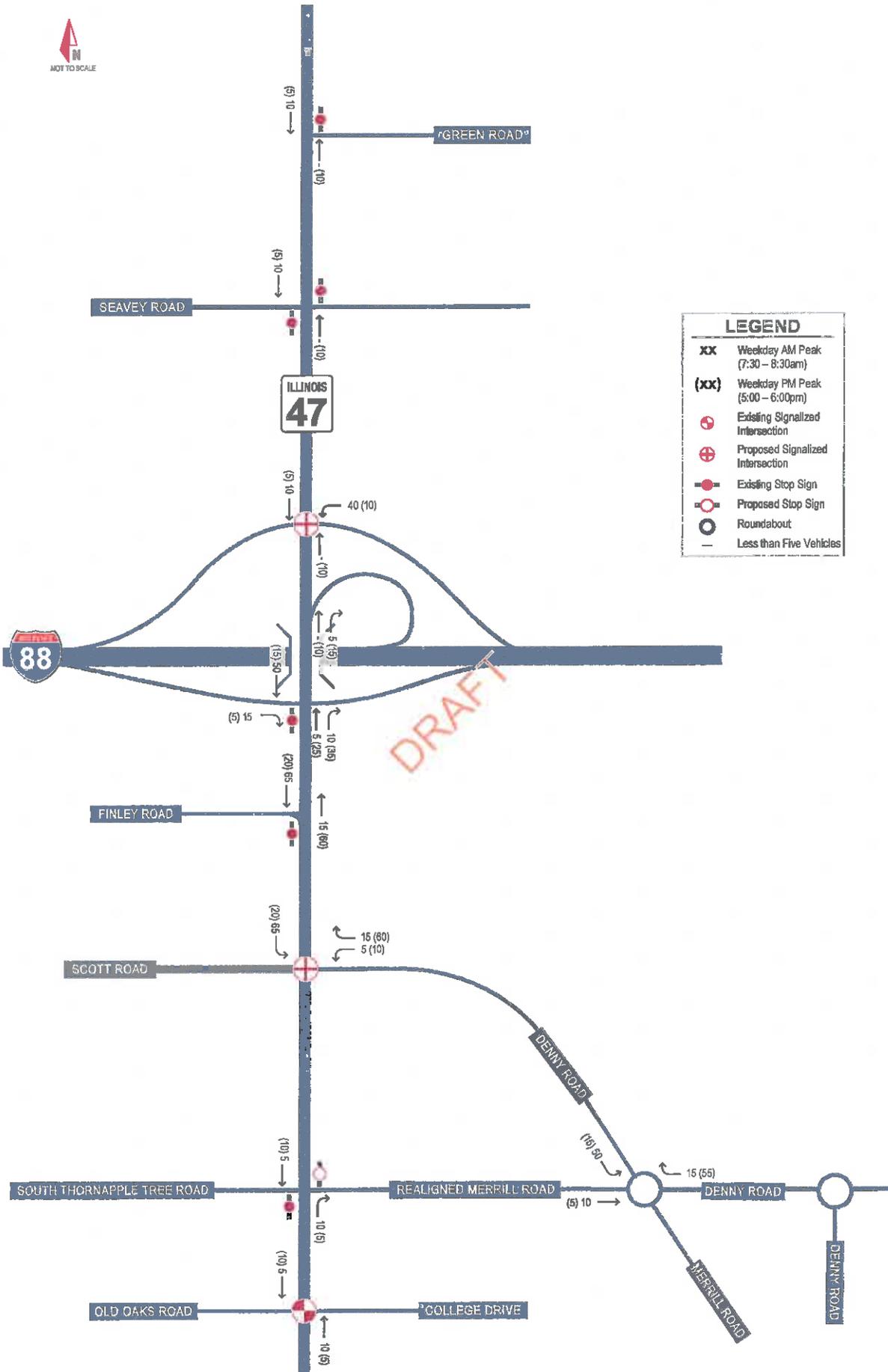
Table 7. Estimated Trip Distribution

| Traveling to/from: | Portion of Site Traffic | |
|----------------------|-------------------------|----------------|
| | Passenger Vehicles | Heavy Vehicles |
| East on I-88 | 50% | 50% |
| West on I-88 | 10% | 20% |
| North on IL Route 47 | 25% | 15% |
| South on IL Route 47 | 15% | 15% |
| Total | 100% | 100% |

Traffic generated by the subject site was assigned to the study intersections and the proposed site access according to this distribution. Phase A site traffic assignment for passenger vehicles and trucks are illustrated in **Exhibits 3 and 4**, respectively. Total site traffic assignment for Phase A is depicted in **Exhibit 5**.

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3.3. Future Capacity Analysis

In order to quantify the impact of site-generated traffic estimated for Phase A, and to identify infrastructure needs to support site access and the addition of site-generated traffic to the local roadway network, a Year 2030 Build scenario was developed.

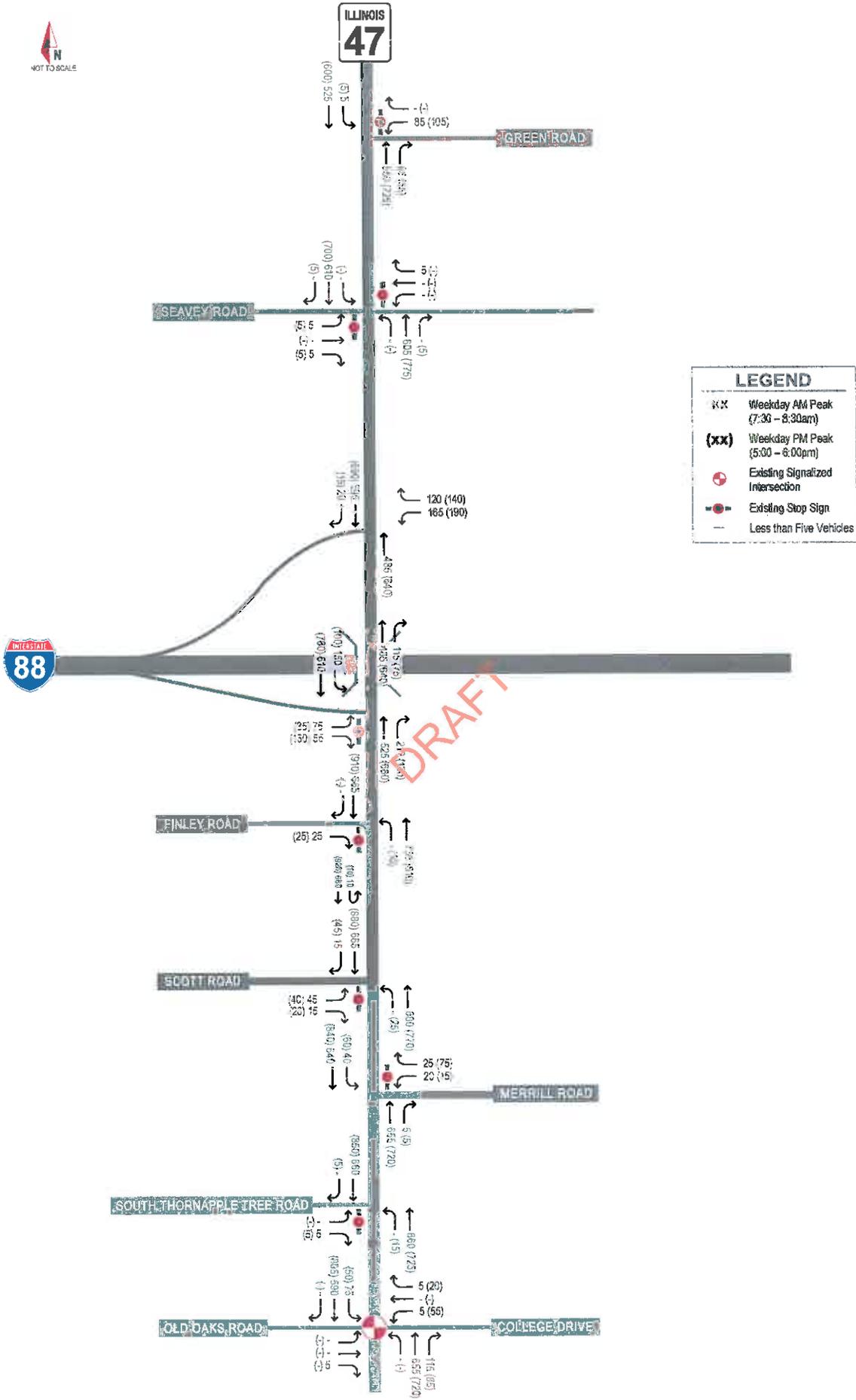
Background Traffic Growth

Background traffic volumes were estimated using data from the Chicago Metropolitan Agency for Planning (CMAP). Based on the scale of the proposed development and a review of initial Year 2040 traffic projections, CMAP adjusted the future background traffic volumes in order to exclude the approximately 760-acre subject property. An official letter from CMAP documenting the projected Year 2040 traffic volume on the study roadways is provided in the Appendix. Based on the information received from CMAP, annual traffic growth on area roadways is projected to occur at the rates identified in **Table 8**. The total future background traffic volumes for Year 2030 are presented in **Exhibit 6**. For purposes of the analysis of future traffic conditions, it was assumed approximately 25 percent of future background traffic (Exhibit 6) on Merrill Road would be redistributed to Denny Road Extension.

Table 8. Future Growth Rates

| Roadway Segment | Growth Rate |
|--|-------------|
| IL Route 47 between I-88 and Green Road ¹ | 2.76% |
| IL Route 47 between I-88 and Old Oaks Road / College Road ¹ | 1.42% |
| Green Road east of IL Route 47 | 2.46% |
| Seavey Road east of IL Route 47 | 2.47% |
| Seavey Road west of IL Route 47 | 2.57% |
| I-88 WB on-ramp west of IL Route 47 | 2.27% |
| I-88 EB off-ramp west of IL Route 47 | 2.55% |
| Finley Road west of IL Route 47 | 4.04% |
| Scott Road west of IL Route 47 | 2.56% |
| Merrill Road east of IL Route 47 | 2.53% |

¹A growth rate of 2.76% was applied to traffic volumes on IL Route 47 north of the I-88 ramps, and a growth rate of 1.42% was applied to traffic volumes on IL Route 47 south of the I-88 ramps. For purposes of this analysis, an average growth rate of 2.09% was applied to traffic volumes on IL Route 47 at the I-88 ramps.



| LEGEND | |
|--------|----------------------------------|
| XX | Weekday AM Peak (7:30 - 8:30am) |
| (XX) | Weekday PM Peak (5:00 - 6:00pm) |
| ⊕ | Existing Signalized Intersection |
| ● | Existing Stop Sign |
| - | Less than Five Vehicles |

Planned Area Improvements

Several improvements are planned for the I-88 interchange with IL Route 47. Based on the Intersection Design Study (IDS) and planned construction in 2019, the following improvements were assumed to be completed by others and in place under the Year 2030 Build scenario. A copy of the IDS is included in the Appendix.

- **IL Route 47 / I-88 Westbound Ramps**

- The east leg was assumed to be constructed as a single lane westbound off-ramp. Per the IDS, a 35 MPH speed limit was assumed for the off-ramp.
- A dedicated right-turn lane was assumed to be provided on the east leg (i.e., westbound off-ramp). Per the IDS, the right-turn lane would provide 350 feet of storage with a 350-foot taper.
- A dedicated left-turn lane was assumed to be provided on the east leg (i.e., westbound off-ramp) and a second left-turn lane would be striped out. Based on the IDS, the left-turn lane would provide 255 feet of storage.
- A dedicated right-turn lane was assumed to be provided on the north leg. According to the IDS, the turn lane would provide 265 feet of storage with a 265-foot taper.
- A westbound loop on-ramp was assumed to be constructed less than 200 feet south of the intersection. Per the IDS, a 35 MPH speed limit was assumed for the loop on-ramp.

- **IL Route 47 / I-88 Eastbound Ramps**

- A dedicated right-turn lane was assumed to be provided on the south leg. Per the IDS, the turn lane would provide 295 feet of storage with a 265-foot taper.
- Dual left-turn lanes were assumed to be provided on the north leg. The outside lane would be striped out until future traffic volumes meet minimum traffic volume criteria for dual left-turn lanes. Per the IDS, the turn lanes would provide 315 feet of storage with a 325-foot taper. It is anticipated the southbound left-turn would operate with a single left-turn lane under the Year 2030 Build scenario.
- Dual right-turn lanes were assumed to be provided on the west leg (i.e., eastbound off-ramp). According to the IDS, the turn lanes would provide 290 feet of storage with a 300-foot taper. It is anticipated the off-ramp would operate with a single right-turn lane under the Year 2030 Build scenario.
- The I-88 Eastbound Off-Ramp was assumed to continue to operate under minor-leg stop-control.

- **IL Route 47 / Finley Road**

- The west leg was assumed to be a three-quarter access with a barrier median to preclude eastbound left-turn movements. "No Left Turn" signage was assumed to be posted for traffic traveling eastbound on Finley Road.
- A dedicated left-turn lane was assumed on the south leg of the intersection. The turn lane was assumed to provide 265 feet of storage with a 265-foot taper.

In addition to planned interchange improvements, for purposes of the Year 2030 Build analysis, a speed limit of 30 MPH was assumed for Denny Road and Realigned Merrill Road.

Signal Warrant Analyses

Evening peak hour traffic projections for the following intersections were compared to criteria provided in the Manual on Uniform Traffic Control Devices (MUTCD) to determine whether a traffic signal may be warranted under the Year 2030 Build scenario:

- IL Route 47 / Seavey Road
- IL Route 47 / I-88 Westbound Ramps
- IL Route 47 / I-88 Eastbound Ramps
- IL Route 47 / Scott Road / Denny Road
- IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road

Signal warrant analyses were performed according to criteria set by the Manual on Uniform Traffic Control Devices (MUTCD) for Warrant 1 (Eight-Hour Warrant), Condition A (Minimum Vehicular Volume) and Condition B (Interruption of Continuous Traffic). Warrant 1 can be satisfied by meeting the following conditions: Condition A (Minimum Vehicular Volume) or Condition B (Interruption of Continuous Traffic). The combined Condition A & B cannot be used if the major route is an SRA route, which is the case for IL Route 47. The signal warrant analysis is typically completed with at least eight hours of traffic count data for an intersection. Because only peak hour projections can be formulated for the proposed development, typical IDOT practice allows a signal warrant to instead be evaluated by reducing evening peak hour volumes to 55 percent of their projected total to represent the minimum volume during a given eight-hour period. Minor-street right-turning volumes were also reduced at the study intersections in accordance with Pagone's Theorem, per IDOT requirements. These reduced volumes were compared to MUTCD criteria for signal warrant analysis.

Table 9 reports the signal warrant analyses conducted for the Year 2030 Build scenario.

Table 9. Year 2030 Signal Warrant Analyses

| Intersection / Warrant Criteria | Traffic Volume | | Meets Warrant? |
|--|----------------|----------------------------------|------------------|
| | Major Street | Higher-Volume Minor-Leg Approach | |
| IL Route 47 / Seavey Road | | | |
| One-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 500 | 150 | - |
| Warrant 1B | 750 | 100 | - |
| Year 2030 Build | 867 | 6 | No |
| IL Route 47 / I-88 Westbound Ramps | | | |
| Two-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 600 | 150 | - |
| Warrant 1B | 900 | 100 | - |
| Year 2030 Build | 789 | 154 | Yes (Warrant 1A) |
| IL Route 47 / I-88 Eastbound Ramps | | | |
| Two-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 600 | 150 | - |
| Warrant 1B | 900 | 100 | - |
| Year 2030 Build | 1,111 | 43 | No |
| IL Route 47 / Scott Road / Denny Road | | | |
| One-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 500 | 150 | - |
| Warrant 1B | 750 | 100 | - |
| Year 2030 Build | 1,001 | 97 | No (See Below) |
| IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road | | | |
| One-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 500 | 150 | - |
| Warrant 1B | 750 | 100 | - |
| Year 2030 Build | 927 | 39 | No |

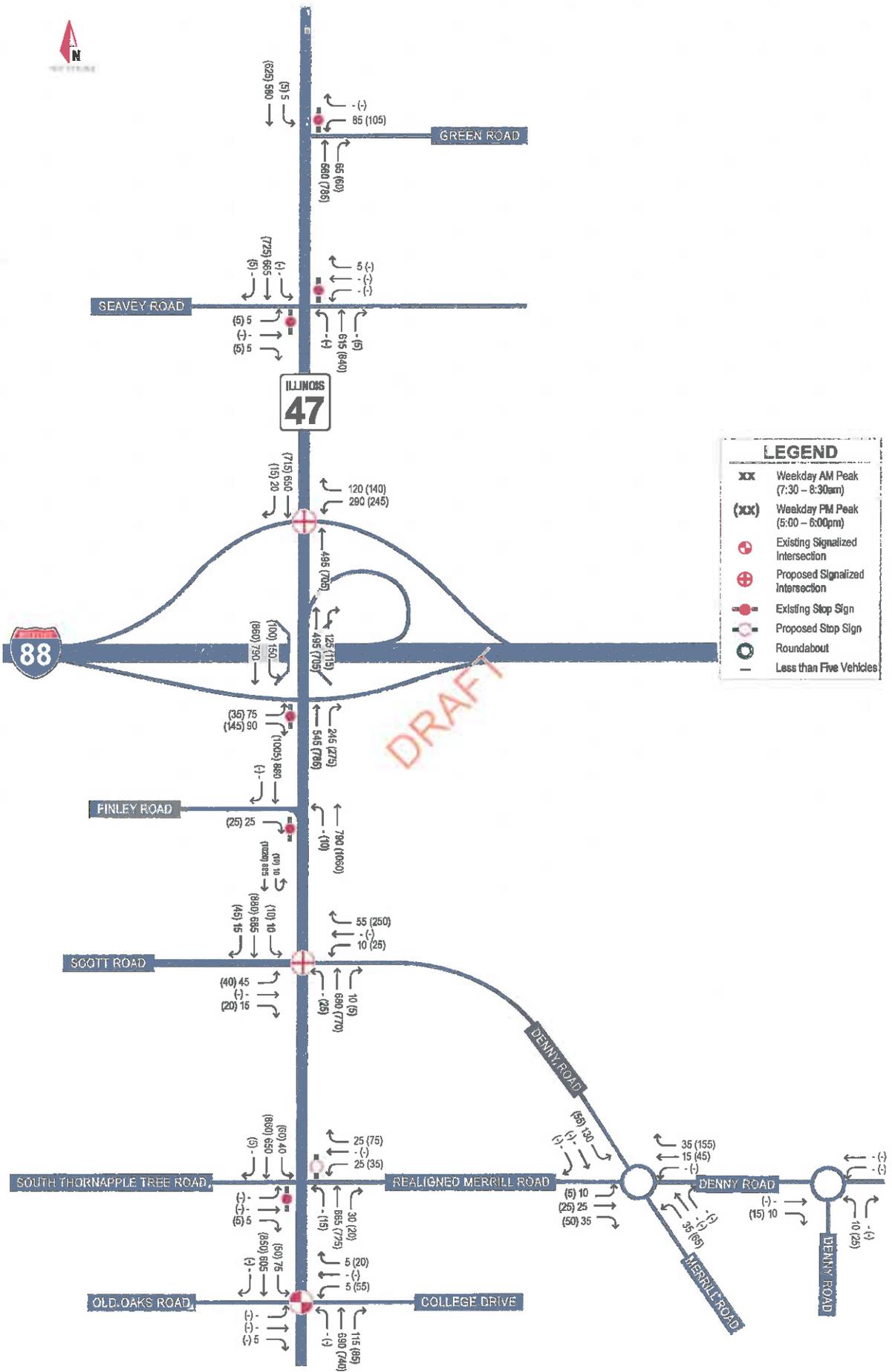
As shown above, a signal is warranted at the intersection of IL Route 47/I-88 Westbound Ramps under the Year 2030 Build scenario. At IL Route 47/Scott Road/Denny Road, the 2030 Build volumes are just below the threshold to warrant a signal. Because the assumption that 25 percent of existing Merrill Road traffic would route via Denny Road is conservative, it is likely that additional traffic would ultimately use Denny Road to reach IL 47 which would result in a signal being warranted. Therefore, traffic signals at the intersections of IL Route 47/Scott Road/Denny Road and IL Route 47/I-88 Westbound Ramps were included in the analysis of Year 2030 Build conditions.

Future (2030) Build Levels of Service

For the analysis of Phase A traffic conditions, site-generated trips (Exhibit 5) were added to Year 2030 future background traffic (Exhibit 6) to yield total volumes at the study intersections. Future traffic projections for the Phase A scenario are illustrated in **Exhibit 7**.

Based on the analysis of Year 2030 Build traffic conditions, several improvements were identified to facilitate site access and mitigate traffic attributable to the proposed development. A summary of the anticipated mitigation included in the Year 2030 Build scenario is provided below. Turn lane warrants and dimensions were evaluated at the study intersections using volume criteria in the IDOT *Bureau of Design and Environment (BDE) Manual*.

- **IL Route 47 / I-88 Westbound Ramps**
 - Per the results of the warrant analysis, install a traffic signal. In order to evaluate traffic conditions and reflect the responsive nature of the signal, the signal was optimized with an assumed minimum cycle length of 90 seconds for each peak hour. Per IDOT requirements, RTOR movements were excluded.
 - Restripe the east leg to facilitate dual left-turn lanes. Per the IDS, the turn lanes should provide 255 feet of storage.
- **IL Route 47 / Scott Road / Denny Road**
 - Construct Denny Road. A three-lane cross-section with a single travel lane in each direction should be provided.
 - Per the results of the signal warrant analysis, install a traffic signal. For purposes of this analysis, a minimum cycle length of 90 seconds was applied to each peak hour, and splits were optimized for future traffic conditions reflected in this study. Per IDOT requirements, RTOR movements were excluded.
 - Install a dedicated left-turn lane on the north and south legs. The turn lanes should provide 265 feet of storage with a 265-foot taper.
 - Provide a dedicated left-turn lane and a shared through/right-turn lane on both the east and west legs of the intersection. Based on a design speed of 30 MPH on Scott Road (25 MPH posted speed limit), the left-turn lane on the west leg should provide 115 feet of storage with a 135-foot taper. Based on an assumed design speed of 35 MPH for Denny Road (30 MPH posted speed limit), the left-turn lane on the east leg should provide 125 feet of storage with a 155-foot taper.
- **IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road**
 - Realign Merrill Road opposite South Thornapple Tree Road. A single travel lane should be provided in each direction. At its intersection with IL Route 47, Merrill Road should operate under minor-leg stop-control.
 - Install a shared left-turn/through lane and a dedicated right-turn lane on the east leg. Based on an assumed design speed of 35 MPH on Realigned Merrill Road, the right-turn lane should provide 125 feet of storage with a 155-foot taper.
 - Install dedicated left-turn lanes on the north and south legs. The turn lanes should provide 265 feet of storage with a 265-foot taper.



- **Denny Road / Realigned Merrill Road / Merrill Road Existing**
 - Install a roundabout in order to enhance safety conditions and reduce travel speeds.
 - The roundabout should be designed to accommodate trucks and provide a single shared lane on each approach. A dedicated slip lane should be provided on the east leg in order to facilitate westbound right-turn movements, including site-generated truck and passenger vehicle trips, without entering the roundabout.
- **Denny Road Extension**
 - Extend Denny Road to the eastern project boundary in order to facilitate access to Zone E and provide for future regional connectivity.
 - A three-lane cross-section with a single travel lane in each direction should be provided along Denny Road Extension.
 - Install a roundabout near the eastern terminus of Denny Road in order to:
 - Reduce travel speeds on Denny Road Extension;
 - Minimize cut-thru traffic in the future residential neighborhood to the south; and
 - Provide a turnaround for wayward trucks.
 - The roundabout should be designed to accommodate trucks and provide a single shared lane on each approach.

With the planned area improvements and recommended mitigation in place, Year 2030 Build traffic operation is projected as shown in **Table 10**. The results are based on Synchro's HCM 2010 reports, copies of which are included in the Appendix.

Table 10. Future (2030) Build Levels of Service

| Intersection | | AM Peak Hour | | PM Peak Hour | | |
|--|-------------------|---------------|-----|---------------|----------------|---|
| | | Delay (s/veh) | LOS | Delay (s/veh) | LOS | |
| IL Route 47 / Green Road | △ | | | | | |
| | Westbound | 40 | E | 109 | F | |
| | | | | | | |
| | Southbound (Left) | 9 | A | 10- | A | |
| IL Route 47 / Seavey Road | △ | | | | | |
| | Eastbound | 25+ | D | 37 | E | |
| | Westbound | 19 | C | 38 | E | |
| | Northbound (Left) | 9 | A | 9 | A | |
| | Southbound (Left) | 9 | A | 10- | A | |
| IL Route 47 / I-88 WB Ramps | * | | | | | |
| | Westbound | 37 | D | 37 | D | |
| | Northbound | 4 | A | 3 | A | |
| | Southbound | 4 | A | 3 | A | |
| | | Intersection | 12 | B | 11 | B |
| IL Route 47 / I-88 EB Ramps | △ | | | | | |
| | Eastbound | >120 | F | 27 | D ¹ | |
| | | | | | | |
| | Southbound (Left) | 9 | A | 10+ | B | |
| IL Route 47 / Finley Road | △ | | | | | |
| | Eastbound (Right) | 17 | C | 20 | C | |
| | | | | | | |
| | Northbound (Left) | 10- | A | 11 | B | |
| IL Route 47 / Scott Road / Denny Road | * | | | | | |
| | Eastbound | 34 | C | 39 | D | |
| | Westbound | 35- | C | 52 | D | |
| | Northbound | 19 | B | 25 | C | |
| | Southbound | 11 | B | 28 | C | |
| | | Intersection | 16 | B | 30 | C |
| IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road | △ | | | | | |
| | Eastbound | 21 | C | 34 | D | |
| | Westbound | 36 | E | 68 | F | |
| | Northbound (Left) | 9 | A | 10- | A | |
| | | | | | | |
| | Southbound (Left) | 9 | A | 10- | A | |
| Denny Road / Realigned Merrill Road / Merrill Road Existing | ○ | | | | | |
| | Eastbound | 5 | A | 5 | A | |
| | Westbound | 1 | A | <1 | A | |
| | Northbound | 5 | A | 4 | A | |
| | Southbound | 7 | A | 5 | A | |
| | | Intersection | 5 | A | 3 | A |

* – Signalized Intersection △ – Minor-Leg Stop-Controlled ○ – Roundabout Intersection
¹Left-turn movement operates at LOS F.

Table 10. Future (2030) Build Levels of Service (continued)

| Intersection | AM Peak Hour | | PM Peak Hour | |
|---|---------------|-----|---------------|-----|
| | Delay (s/veh) | LOS | Delay (s/veh) | LOS |
| Denny Road / Zone E Access (Turnaround) ○ | | | | |
| Eastbound | 3 | A | 3 | A |
| Westbound | 3 | A | 3 | A |
| Northbound | 3 | A | 4 | A |
| Intersection | 3 | A | 3 | A |
| IL Route 47 / Old Oaks Road / College Drive ★ | | | | |
| Eastbound | 25 | C | 26 | C |
| Westbound | 26 | C | 27 | C |
| Northbound | 6 | A | 6 | A |
| Southbound | 5 | A | 7 | A |
| Intersection | 6 | A | 7 | A |

★ – Signalized Intersection △ – Minor-Leg Stop-Controlled ○ – Roundabout Intersection

As shown in Table 10, with the addition of background traffic growth, site-generated traffic, and planned improvements, the northbound and southbound through movements on IL Route 47 are projected to operate at LOS C or better at each study intersection.

At the intersection of IL Route 47/Green Road, the westbound approach is projected to operate at LOS E during the morning peak hour and LOS F during the evening peak hour. The projected delay is not uncommon for minor-leg stop-controlled roadways at intersections with heavily traveled arterials such as IL Route 47. Projected 95th percentile queue lengths on Green Road are approximately two vehicles (50 feet) during the morning peak hour and five vehicles (125 feet) during the evening peak hour.

At the intersection of IL Route 47/Seavey Road, the eastbound and westbound approaches are projected to operate at LOS E during the evening peak hour. The projected delay is not uncommon for minor-leg stop-controlled roadways at intersections with heavily traveled arterials such as IL Route 47. Projected 95th percentile queue lengths on Seavey Road are approximately one vehicle (25 feet) or less for both minor-leg approaches during each peak hour.

With the improvements to the I-88 interchange, the westbound off-ramp is projected to operate at LOS D during each peak hour. The projected 95th percentile queue for the westbound left-turn movement is approximately seven vehicles (175 feet) during the morning and evening peak hours. The projected 95th percentile queues would be accommodated within the planned storage lanes; and therefore, queue spillback to the I-88 mainline travel lanes is not anticipated.

The eastbound off-ramp is projected to operate at LOS F during the morning peak hour, and LOS D during the evening peak hour. The delay is not uncommon for a minor-leg stop-controlled intersection with a heavily traveled roadway such as IL Route 47. During the morning peak hour, the 95th percentile queue projected for the left-turn movement is approximately eight vehicles (200 feet), and the right-turn movement is estimated to be approximately one vehicle (25 feet). During the evening peak hour, the 95th percentile queue projected for the left-turn movement is approximately two vehicles (50 feet), and the right-turn movement is estimated to be approximately one vehicle (25 feet). The 95th

percentile queues would be accommodated within the planned storage lanes without spillback to the I-88 mainline travel lanes.

At the intersection of IL Route 47 at Scott Road/Denny Road, the eastbound and westbound approaches are projected to operate at LOS C during the morning peak hour and LOS D during the evening peak hour. The 95th percentile queue projected for the southbound left-turn movement is approximately six vehicles (150 feet) during the morning peak hour and two vehicles (50 feet) during the evening peak hour. These queues would be accommodated within the 265-foot left-turn storage lane. The 95th percentile queue projected for the northbound left-turn movement is approximately one vehicle (25 feet) or less during both peak hours. During each peak hour, the 95th percentile queues projected for the eastbound and westbound left-turn movements are approximately two vehicles (50 feet) or less.

At the intersection of IL Route 47 at South Thornapple Tree Road / Merrill Road, the northbound and southbound left-turn movements are projected to operate at LOS A during the morning and evening peak hours. The eastbound approach is projected to operate at LOS C during the morning peak hour and LOS D during the evening peak hour. The westbound approach is projected to operate at LOS E during the morning peak hour and LOS F during the evening peak hour. On the westbound approach, the 95th percentile queues are approximately one vehicle (25 feet) or less. During the evening peak hour, the 95th percentile queues are approximately three vehicles (75 feet) for the left-turn movement and one vehicle (25 feet) for the right-turn movement.

During both peak hours, the roundabouts are projected to operate at an overall LOS A with each approach operating with limited delay.

4. FUTURE CONCEPT CONDITIONS

This section of the report outlines the preliminary concept plan for Phase B. In addition, this section of the report summarizes initial estimates for site traffic characteristics, future traffic projections, and capacity analysis results. This preliminary information is provided in order to define anticipated infrastructure improvements which may be needed to support continued traffic growth in the study area. As the development plan for Phase B is further refined and background traffic volumes are realized, additional analyses of Phase B traffic conditions are anticipated.

4.1. Concept Characteristics & Site Access

A mix of uses is contemplated for Phase B of the development. Based on the current plan, Phase B is anticipated to include 4,021,900 square feet of industrial warehouse/distribution use, 149,000 square feet of retail use, and 177 single-family residential units. A conceptual site plan is included in the Appendix.

Access to Phase B would include site access driveways to IL Route 47. For purposes of this analysis, the following proposed site access driveways along IL Route 47 were included. Site access driveways proposed along Seavey Road were not included in the analysis.

- **Zone A** – A right-out (RO) access driveway to IL Route 47 (Access C) located approximately 500 feet south of Seavey Road.
- **Zone B** – A full-access driveway aligned opposite Oakleaf Drive (Access A) and a right-in/right-out (RIRO) access driveway (Access B) located approximately 640 feet south of Access A.
- **Zone C** – A right-in (RI) access driveway (Access D) would be provided approximately 500 feet south of Seavey Road.
- **Zone D** – A single full-access driveway (Access E) is assumed to be provided along IL Route 47 south of Finley Road.

The residential component included in Zone F is assumed to be accessed via Merrill Road southeast of its intersection with IL Route 47. The site access details for Zone F are subject to change as the plan is further refined; therefore, the site access driveways for Zone F were not included in the analysis.

4.2. Trip Generation, Distribution, & Assignment

In order to calculate site-generated traffic projections for the site, data was referenced from the Institute of Transportation Engineers (ITE) manual Trip Generation, Tenth Edition. Trip generation data for the ITE Land Use Code (LUC) corresponding to the proposed uses are shown in **Table 11**. Where provided, the trip generation formula was assumed. A copy of ITE data is provided in the Appendix.

Table 11. ITE Trip Generation Data by Land Use

| ITE Land Use / Unit | Unit | Type | Weekday | | |
|--|-------------------|-----------------------------|--|--|--|
| | | | Daily | AM Peak | PM Peak |
| High-Cube Transload and Short-Term Storage Warehouse (LUC 154) | Per 1,000 sq. ft. | Passenger Vehicles | 0.946X 50% in/50% out | 0.056X 77% in/23% out | 0.077X 28% in/72% out |
| | | Heavy Vehicles ¹ | 0.454X 50% in/50% out | 0.024X 77% in/23% out | 0.023X 28% in/72% out |
| Single-Family Housing (LUC 210) | Per Unit | Passenger Vehicles | $\ln(T) = 0.92\ln(U) + 2.71$ 50% in/50% out | $T = 0.71U + 4.80$ 25% in/75% out | $\ln(T) = 0.96\ln(U) + 0.20$ 63% in/37% out |
| Shopping Center (LUC 820) | Per 1,000 sq. ft. | Passenger Vehicles | $\ln(T) = 0.68\ln(X) + 5.57$ 50% in/50% out | $T = 0.50X + 151.78$ 62% in/38% out | $\ln(T) = 0.74\ln(X) + 2.89$ 63% in/37% out |

¹The ITE Trip Generation, Tenth Edition manual does not provide data for heavy vehicles. Per guidance provided in the ITE manual for LUC 154, data provided in the High-Cube Warehouse Vehicle Trip Generation Analysis, published in October 2016 was assumed. Tables 5-7 of the High-Cube Warehouse Vehicle Trip Generation Analysis outline the daily and peak hour trip generation rates for heavy vehicles. A copy of the supplemental data is provided in the appendix. The In/out distribution percentages were obtained from the Trip Generation, Tenth Edition manual.

Per these assumptions and the calculations detailed previously, site-generated traffic projections were calculated for Phase B. The site-generated trips generated during the peak hour were rounded to the nearest multiple of five for the purposes of this analysis, and daily trips were rounded to the nearest multiple of ten. A preliminary summary of Phase B trips is provided in Table 12.

Table 12. Site-Generated Traffic Projections¹

| Land Use | Size | Type | Daily | Weekday | | | | | |
|--|-------------------|----------------|---------------|------------|------------|--------------|------------|--------------|--------------|
| | | | | AM Peak | | | PM Peak | | |
| | | | | In | Out | Total | In | Out | Total |
| Phase B | | | | | | | | | |
| High-Cube Transload and Short-Term Storage Warehouse (LUC 154) | 4,021,900 sq. ft. | Passenger Cars | 3,800 | 175 | 50 | 225 | 85 | 225 | 310 |
| | | Heavy Vehicles | 1,830 | 75 | 20 | 95 | 25 | 70 | 95 |
| Single-Family Housing (LUC 210) | 177 units | Passenger Cars | 1,760 | 30 | 100 | 130 | 110 | 65 | 175 |
| Shopping Center (LUC 820) | 149,000 sq. ft. | Passenger Cars | 9,780 | 235 | 145 | 380 | 415 | 450 | 865 |
| Subtotal Phase B | | | 17,170 | 515 | 315 | 830 | 635 | 810 | 1,445 |
| Subtotal Phase A (Table 6) | | | 5,680 | 250 | 70 | 320 | 115 | 295 | 410 |
| Total Site-Generated Traffic (Phase A + Phase B) | | | 22,850 | 765 | 385 | 1,150 | 750 | 1,105 | 1,855 |

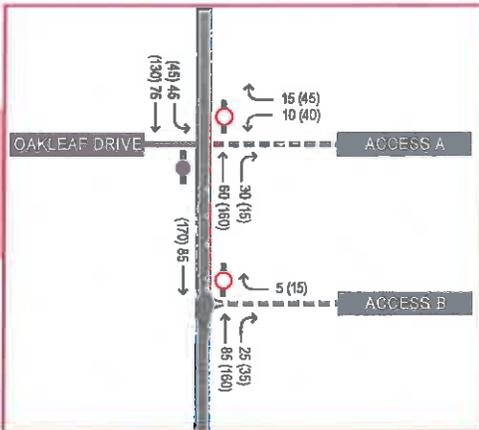
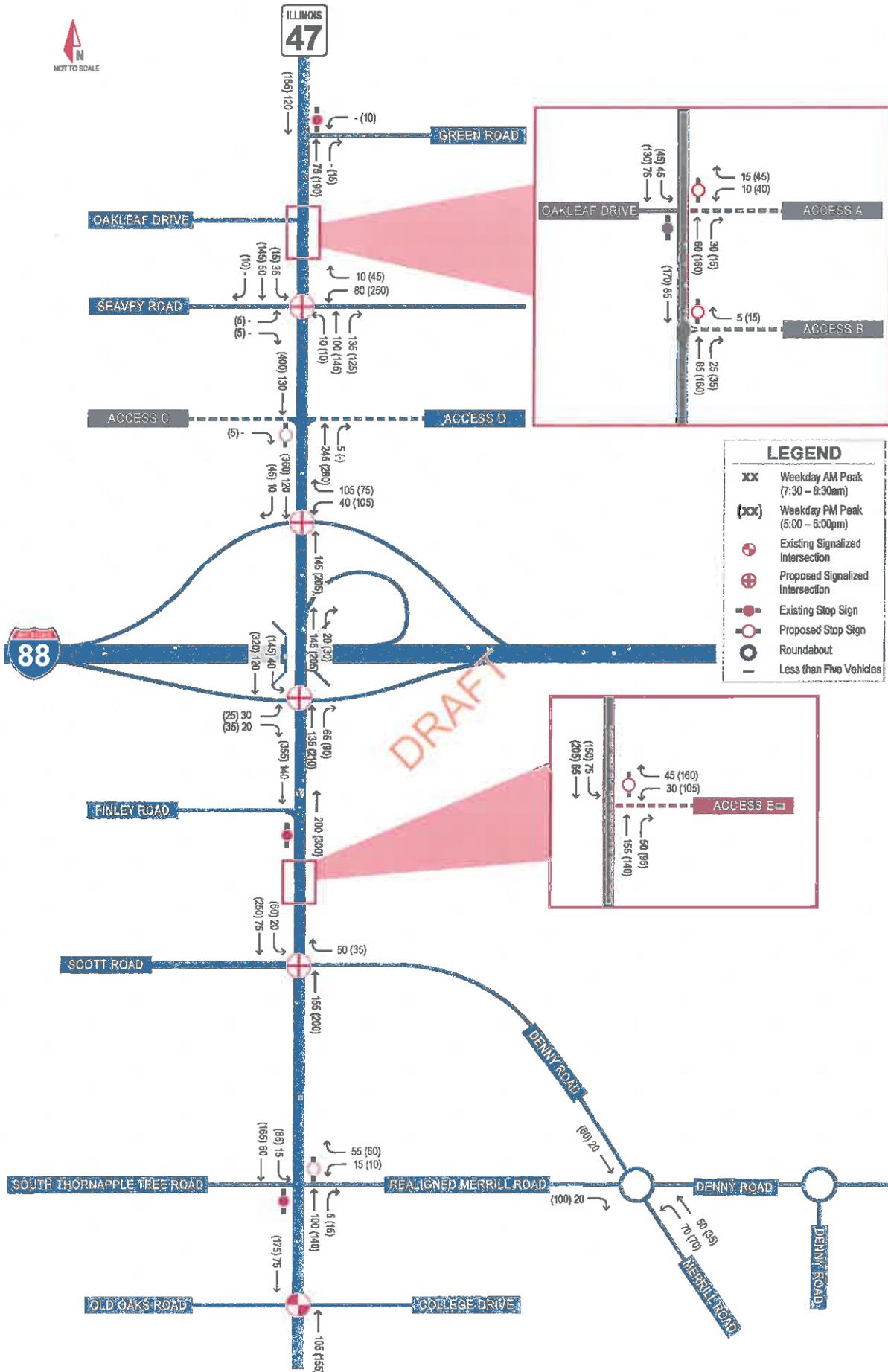
¹In/Out volumes are rounded to the nearest multiple of five. For rounding purposes, the total volumes are a sum of in and out trips.

Similar to Phase A, the distribution of Phase B truck traffic was based on prevailing truck traffic volumes/patterns and the planned I-88 interchange improvements at IL Route 47. The distributions estimated for passenger vehicle traffic for the industrial warehouse, retail, and residential uses are based on a number of factors, including the nature of surrounding land uses, prevailing traffic volumes/patterns, characteristics of the street system, and the ease with which motorists can travel over various sections of that system. The planned interchange improvements were also considered for the estimated passenger vehicle distributions. The estimated trip distributions are summarized in **Table 13**.

Table 13. Estimated Trip Distribution

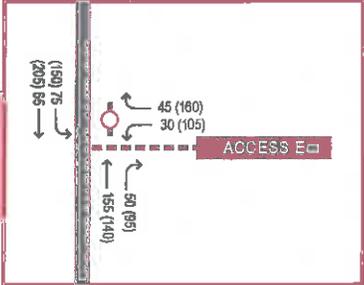
| Traveling to/from: | Portion of Site Traffic | | | |
|----------------------|-------------------------|----------------|--------------------|--------------------|
| | Industrial Warehouse | | Residential | Retail |
| | Passenger Vehicles | Heavy Vehicles | Passenger Vehicles | Passenger Vehicles |
| East on I-88 | 50% | 50% | 50% | 20% |
| West on I-88 | 10% | 20% | 10% | 10% |
| North on IL Route 47 | 25% | 15% | 25% | 30% |
| South on IL Route 47 | 15% | 15% | 15% | 40% |
| Total | 100% | 100% | 100% | 100% |

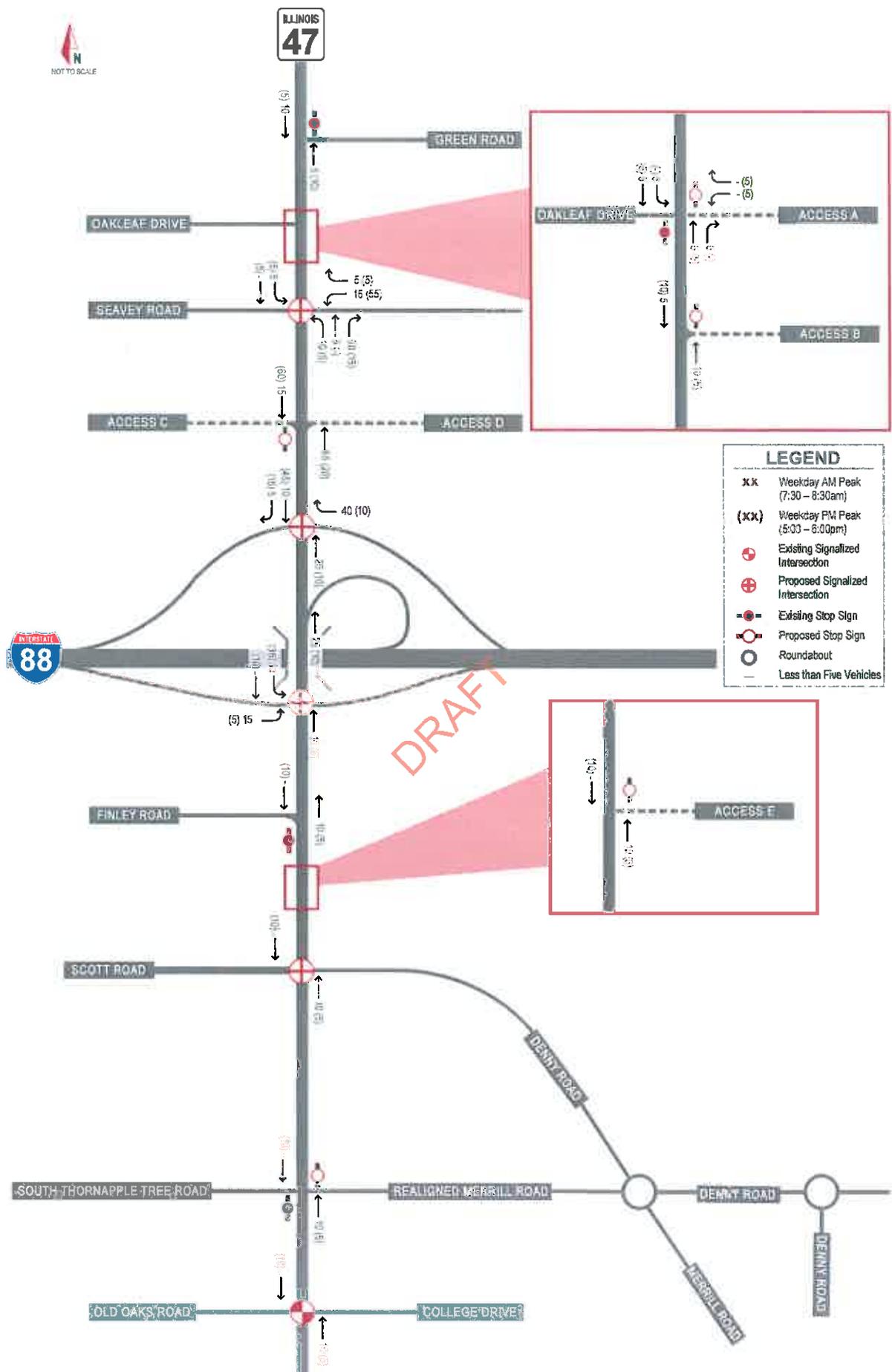
Traffic generated by the subject site was assigned to the study intersections and the proposed site access according to this distribution. Phase B site traffic assignment for passenger vehicles and trucks are illustrated in **Exhibits 8 and 9**, respectively. Total site traffic assignment for Phase B is depicted in **Exhibit 10**.



LEGEND

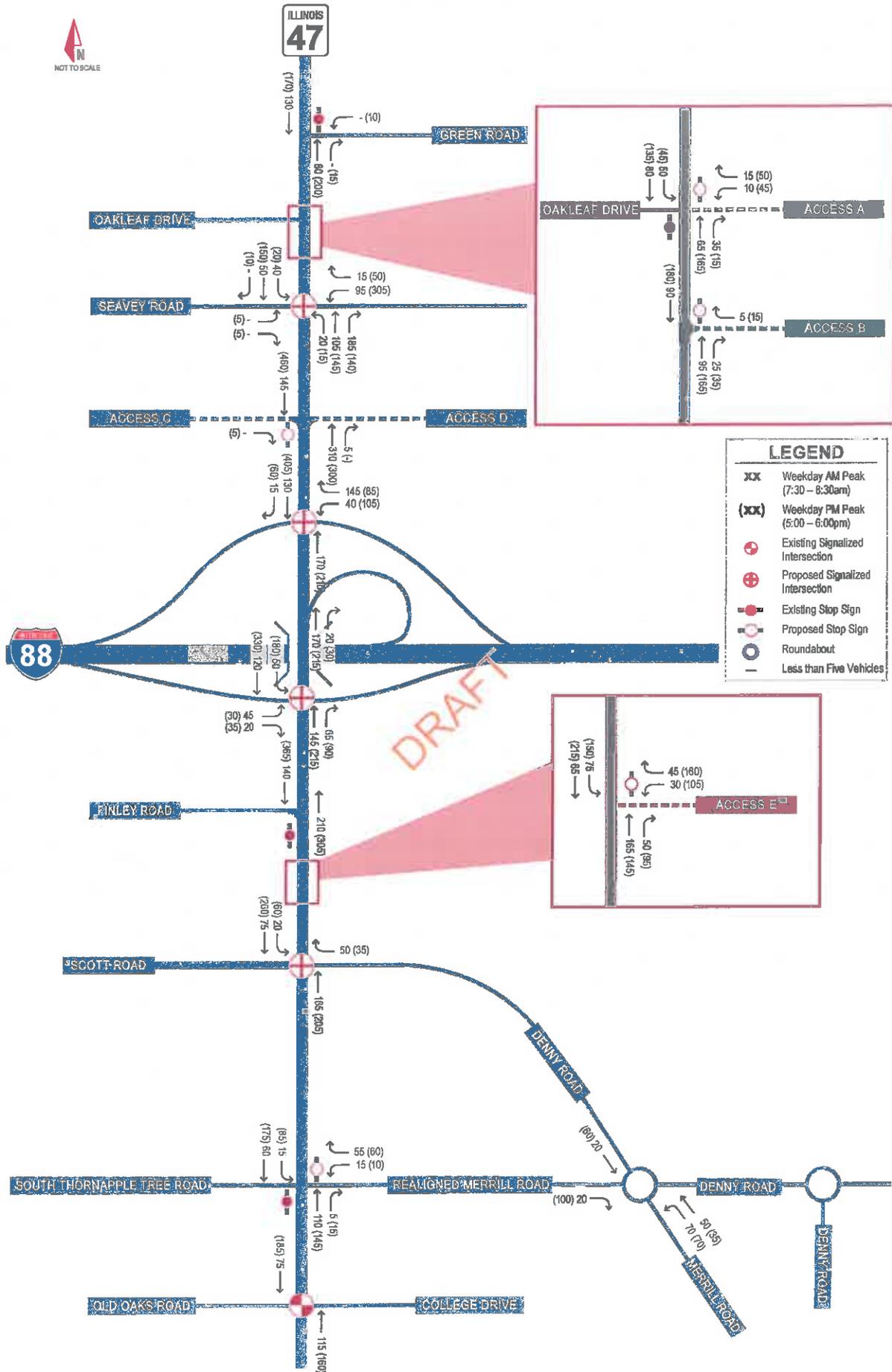
- XX** Weekday AM Peak (7:30 – 8:30am)
- (XX)** Weekday PM Peak (5:00 – 6:00pm)
- ⊕ Existing Signalized Intersection
- ⊕ Proposed Signalized Intersection
- ⊙ Existing Stop Sign
- ⊙ Proposed Stop Sign
- Roundabout
- Less than Five Vehicles





LEGEND

- xx** Weekday AM Peak (7:30 – 8:30am)
- (xx)** Weekday PM Peak (5:00 – 6:00pm)
- Existing Signalized Intersection
- Proposed Signalized Intersection
- Existing Stop Sign
- Proposed Stop Sign
- Roundabout
- Less than Five Vehicles



| LEGEND | |
|--------|----------------------------------|
| xx | Weekday AM Peak (7:30 – 8:30am) |
| (xx) | Weekday PM Peak (5:00 – 6:00pm) |
| ⊕ | Existing Signalized Intersection |
| ⊕ | Proposed Signalized Intersection |
| ● | Existing Stop Sign |
| ○ | Proposed Stop Sign |
| ⊙ | Roundabout |
| — | Less than Five Vehicles |

4.3. Future Concept Capacity Analysis

In order to quantify the impact of site-generated traffic estimated for Phase B, and to identify potential infrastructure needs to support site access and the addition of site-generated traffic to the local roadway network, a preliminary Year 2040 Build scenario was developed.

Background Traffic Growth

In order to estimate background traffic volumes for Year 2040, the CMAP growth rates presented in Table 8 were applied to the study intersections. The total future background traffic volumes for Year 2040 are presented in **Exhibit 11**.

Planned Area Improvements

Under the Year 2040 Build scenario, the full interchange improvement was assumed to be completed. Additional improvements were also included in the Year 2040 Build scenario. Based on a completed Phase I study, the IL Route 47 corridor was assumed to be widened to a four-lane cross-section. Planned by others, this improvement would extend from north of Green Road to its southern terminus north of Old Oaks Road/College Drive. As part of this project, a barrier median would be installed along IL Route 47 from south of I-88 to north of Old Oaks Road/College Drive. Median breaks would be provided in order to accommodate turning movements at existing intersections and planned site access driveways. Based on the completed Phase I study, the following improvements were assumed to be completed by others and in place under the Year 2040 Build scenario. These improvements are anticipated in addition to the improvements included in the Year 2030 Build scenario.

- **IL Route 47 / Green Road**
 - The south leg was assumed to provide a single through lane and one dedicated right-turn lane. The right-turn lane was assumed to provide 265 feet of storage with a 265-foot taper.
 - The east leg was assumed to provide separate left- and right-turn lanes. The new dedicated right-turn lane would provide 240 feet of storage and a 240-foot taper.
- **IL Route 47 / Seavey Road**
 - The north and south legs were assumed to provide a dedicated left-turn lane, two through lanes, and a dedicated right-turn lane. The left- and right-turn lanes would provide 265 feet of storage with a 265-foot taper.
 - The east and west legs were assumed to provide a dedicated left-turn lane and one shared through/right-turn lane. The left-turn lanes would provide 185 feet of storage with a 200-foot taper.

- **IL Route 47 / I-88 Westbound Ramps**
 - As a result of the new traffic signals identified for the IL Route 47 corridor, the traffic signal timing was updated to reflect an optimized network. Per IDOT requirements, RTOR movements were excluded.
- **IL Route 47 / I-88 Eastbound Ramps**
 - Per the full interchange improvements, a traffic signal was assumed to be installed. For purposes of this analysis, a cycle length of 120 seconds was applied to each peak hour, and the network was optimized for future traffic conditions reflected in this study. Per IDOT requirements, RTOR movements were excluded.
 - The right-turn lanes on the west leg (i.e., eastbound off-ramp) were assumed to be restriped in order to provide dual turn lanes. According to the IDS, the turn lanes would provide 290 feet of storage with a 300-foot taper.
 - The left-turn lanes on the north leg were assumed to be restriped in order to provide dual turn lanes. Per the IDS, the turn lanes would provide 315 feet of storage with a 325-foot taper.
- **IL Route 47 / Scott Road / Denny Road**
 - With the mitigation defined under the Year 2030 Build scenario, the following assumptions were applied to the Year 2040 scenario in order to reflect the planned widening along the IL Route 47 corridor:
 - North Leg: A dedicated left-turn lane, two through lanes, and a dedicated right-turn lane.
 - South Leg: A dedicated left-turn lane, one through lane, and one shared through/right-turn lane.
- **IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road**
 - With the mitigation identified under the Year 2030 Build scenario, the following assumptions were applied to the Year 2040 scenario in order to reflect the planned widening along the IL Route 47 corridor:
 - North Leg: A dedicated left-turn lane, one through lane, and one shared through/right-turn lane.
 - South Leg: A dedicated left-turn lane, one through lane, and one shared through/right-turn lane.

Signal Warrant Analyses

Similar to the analysis completed for Phase A, evening peak hour traffic projections for the following intersections were compared to criteria provided in the Manual on Uniform Traffic Control Devices (MUTCD) to determine whether a traffic signal may be warranted under the Year 2040 Build scenario.

- IL Route 47 / Seavey Road
- IL Route 47 / I-88 Eastbound Ramps
- IL Route 47 / Access E
- IL Route 47 / South Thornapple Tree Road / Merrill Road

The intersections of IL Route 47/I-88 Westbound Ramps and IL Route 47/Scott Road/Denny Road were excluded from this analysis as the traffic volumes projected for the Year 2030 Build scenario

meet the criteria for installation of a traffic signal; and therefore, these signals were included for the analysis of both Year 2030 and Year 2040 Build conditions.

The signal warrant analyses were performed according to criteria set by the Manual on Uniform Traffic Control Devices (MUTCD) for Warrant 1 (Eight-Hour Warrant), Condition A (Minimum Vehicular Volume) and Condition B (Interruption of Continuous Traffic). **Table 14** reports the signal warrant analyses conducted for the Year 2040 Build scenario.

Table 14. Year 2040 Signal Warrant Analyses

| Intersection / Warrant Criteria | Traffic Volume | | Meets Warrant? |
|--|----------------|----------------------------------|-----------------------|
| | Major Street | Higher-Volume Minor-Leg Approach | |
| IL Route 47 / Seavey Road | | | |
| Two-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 600 | 150 | -- |
| Warrant 1B | 900 | 100 | -- |
| Year 2040 Build | 1,389 | 184 | Yes (Warrant 1A & 1B) |
| IL Route 47 / I-88 Eastbound Ramps | | | |
| Two-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 600 | 150 | -- |
| Warrant 1B | 900 | 100 | -- |
| Year 2040 Build | 1,376 | 97 | No |
| IL Route 47 / Access E | | | |
| Two-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 600 | 150 | -- |
| Warrant 1B | 900 | 100 | -- |
| Year 2040 Build | 1,796 | 97 | No |
| IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road | | | |
| Two-Lane Major Street/One-Lane Minor Street at 100% | | | |
| MUTCD Criteria | | | |
| Warrant 1A | 600 | 150 | -- |
| Warrant 1B | 900 | 100 | -- |
| Year 2040 Build | 1,452 | 57 | No |

As shown above, a signal is warranted at the intersection of IL Route 47/Seavey Road; and therefore, a signal was included in the analysis of the Year 2040 Build scenario. As part of the interchange improvements a traffic signal is planned for the intersection of IL Route 47/I-88 Eastbound Ramps; and therefore, the traffic signal was included in the analysis of Year 2040 Build conditions.

Future (2040) Build Levels of Service

For the preliminary analysis of Phase B traffic conditions, site-generated trips (Exhibit 10) were added to Year 2040 future background traffic (Exhibit 11) to yield total volumes at the study intersections. Future traffic projections for the Phase B scenario are illustrated in Exhibit 12.

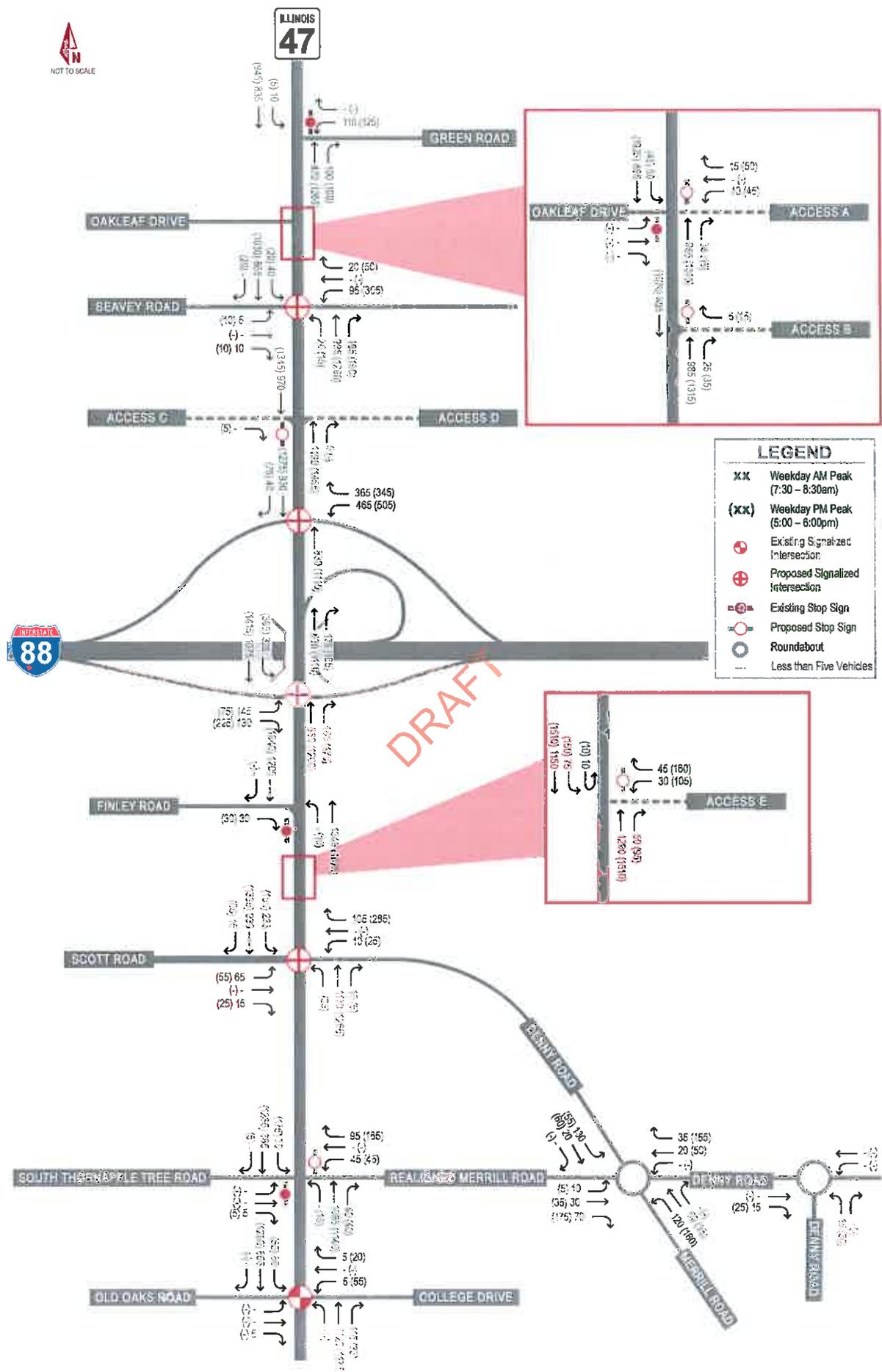
Based on the analysis of Year 2040 Build traffic conditions, several preliminary improvements were identified to facilitate site access and mitigate initial traffic projections for Phase B. In addition to the improvements identified under the Year 2030 scenario, the following improvements were included in the Year 2040 Build scenario. Turn lane warrants and dimensions were evaluated at the study intersections using volume criteria in the IDOT *BDE Manual*. A summary of the anticipated improvements is provided below. A summary of the improvements identified for Year 2030 and Year 2040 is provided in Exhibit 13a through Exhibit 13e.

- **IL Route 47 / Seavey Road**
 - Reconstruct Seavey Road as a three-lane cross-section across the subject property frontage. A two-way left-turn center median would facilitate access to industrial warehouse/distribution center uses included in Zone A through Zone C.
 - Per the results of the signal warrant analysis, install a traffic signal. For purposes of this analysis, a cycle length of 120 seconds was applied to each peak hour, and the network was optimized for future traffic conditions reflected in this study.
 - On the east leg of the intersection, install dual left-turn lanes and a dedicated right-turn lane. The left-turn lanes should provide 185 feet of storage with a 300-foot taper, and the right-turn lanes should provide 185 feet of storage with a 200-foot taper.
- **IL Route 47 / Oakleaf Drive / Access A**
 - Install a dedicated left-turn lane on the north and south legs. The turn lanes should provide 265 feet of storage with a 265-foot taper.
 - Provide a single inbound lane and outbound shared left-turn/through and dedicated right-turn lanes for Access A.
 - Post minor-leg stop control for outbound traffic at Access A.
- **IL Route 47 / Access B**
 - Design Access B to preclude left-turn movements.
 - Provide a single inbound lane and a single outbound right-turn only lane for at Access B.
 - Post "No Left Turn" signage and minor-leg stop-control for outbound traffic at Access B.
- **IL Route 47 / Access C / Access D**
 - Design Access C to preclude left-turn movements.
 - Provide a single right-turn only lane for outbound traffic at Access C.
 - Post "No Left Turn" signage and minor-leg stop-control for outbound traffic at Access C.
 - Provide a single inbound lane at Access D. No outbound traffic is permitted at Access D.
- **IL Route 47 / Access E**
 - Install a dedicated left-turn lane on the north leg. The turn lane should provide 265 feet of storage with a 265-foot taper.

- Provide a dedicated right-turn lane on the south leg. The turn lane should provide 265 feet of storage with a 265-foot taper.
- Provide a single inbound lane and separate outbound left- and right-turn lanes at Access E.
- Post minor-leg stop control for outbound traffic at Access E.
- **IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road**
 - Provide a dedicated right-turn lane on the south leg. The turn lane should provide 265 feet of storage with a 265-foot taper.

With these improvements in place, Year 2040 Build traffic operation is projected as shown in **Table 15**. The results are based on Synchro's HCM 2010 reports, copies of which are included in the Appendix.

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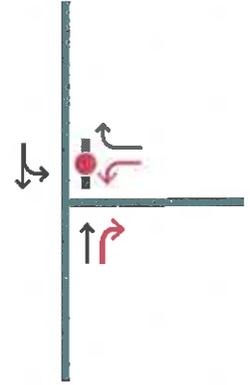
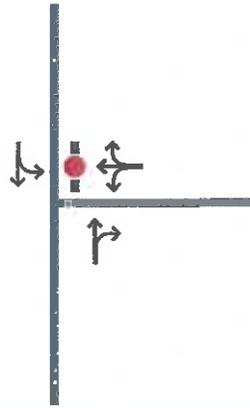
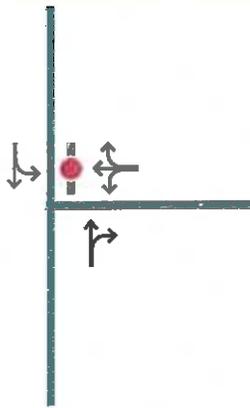
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EXISTING (YEAR 2018)

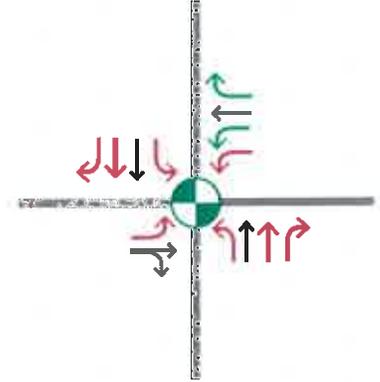
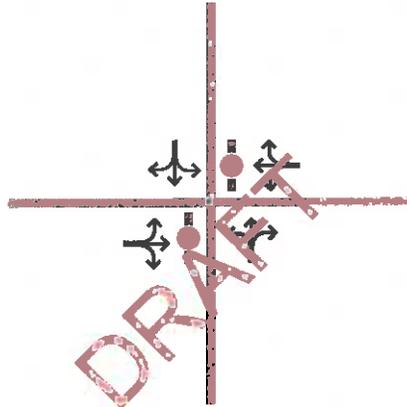
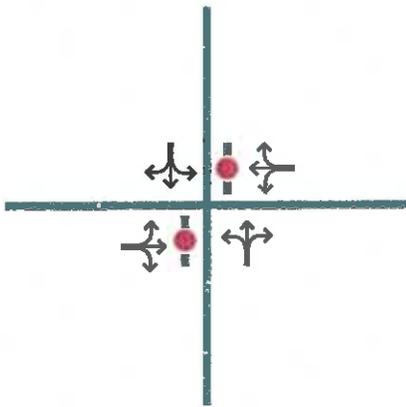
PHASE A (YEAR 2030)

FULL BUILDOUT (YEAR 2040)

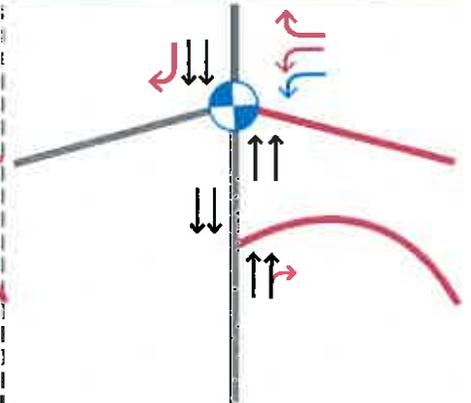
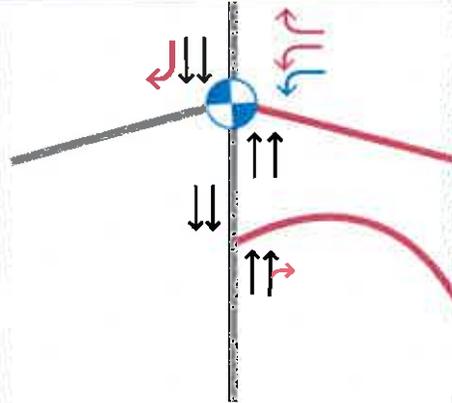
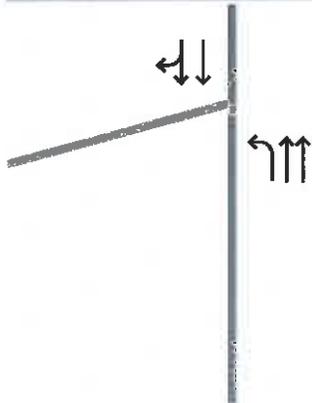
IL ROUTE 47 / GREEN ROAD



IL ROUTE 47 / SEAVEY ROAD



IL ROUTE 47 / I-88 WESTBOUND RAMP

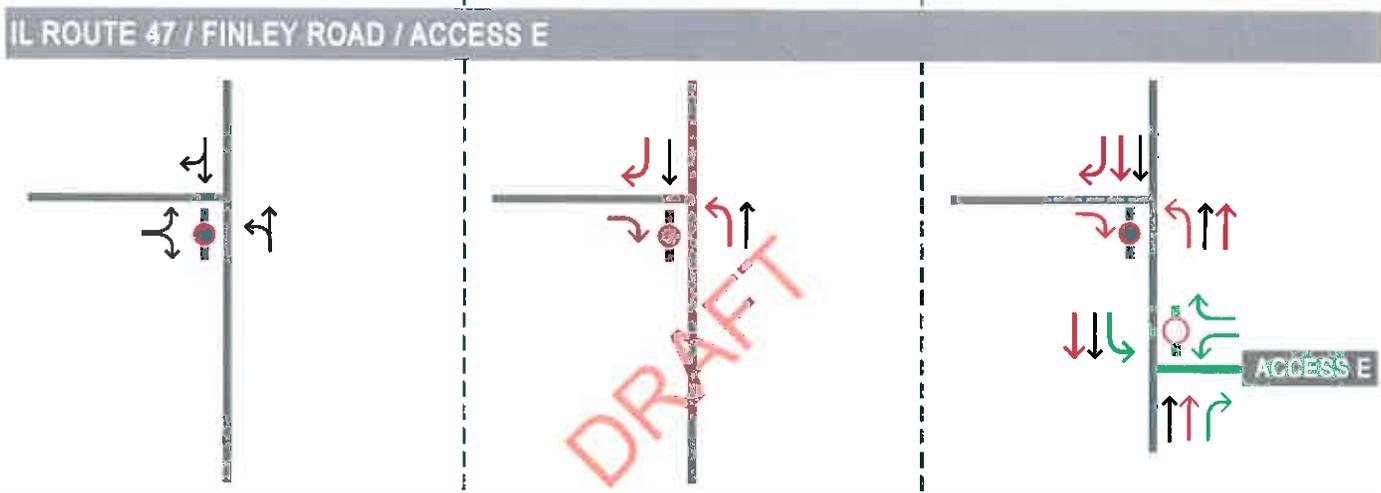
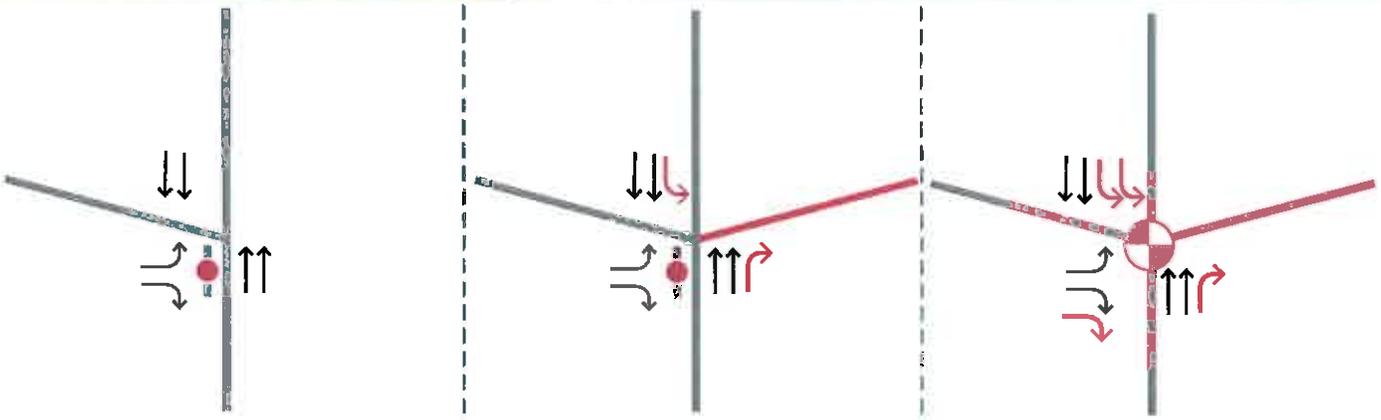


LEGEND

- Existing Stop Sign
- Future Stop Sign
- ⊙ Existing Signalized Intersection
- ⊙ Year 2030 Signalized Intersection
- ⊙ Full Buildout Signalized Intersection
- ⊙ New Signalized Intersection Planned By Others
- ↔ Existing Geometrics
- ↔ Planned By Others
- ↔ Year 2030 Build Geometrics
- ↔ Full Buildout Geometrics

N
NOT TO SCALE

| EXISTING (YEAR 2018) | PHASE A (YEAR 2030) | FULL BUILDOUT (YEAR 2040) |
|----------------------|---------------------|---------------------------|
|----------------------|---------------------|---------------------------|



LEGEND

- Existing Stop Sign
- Future Stop Sign
- Existing Signalized Intersection
- Year 2030 Signalized Intersection
- Full Buildout Signalized Intersection
- New Signalized Intersection Planned By Others
- Existing Geometrics
- Planned By Others
- Year 2030 Build Geometrics
- Full Buildout Geometrics

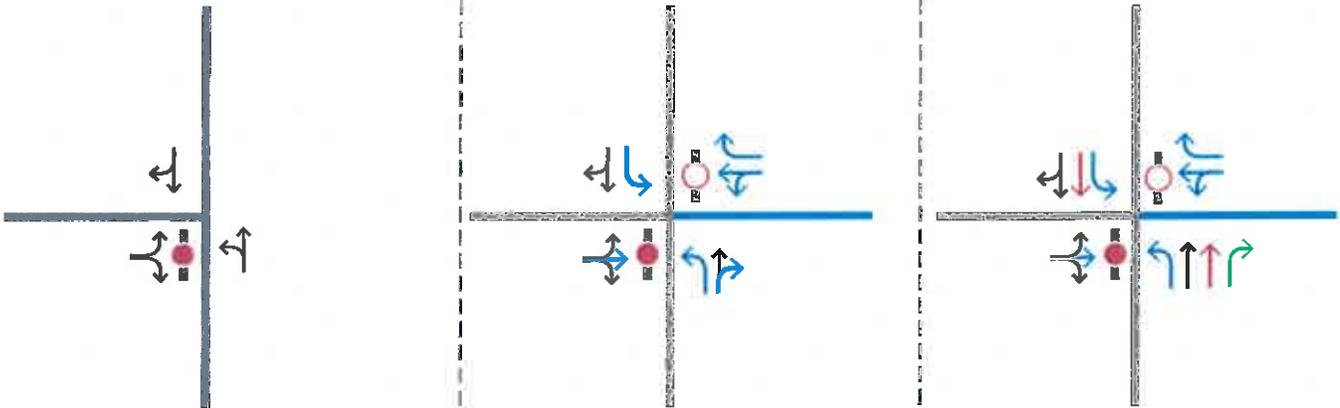
NOT TO SCALE

EXISTING (YEAR 2018)

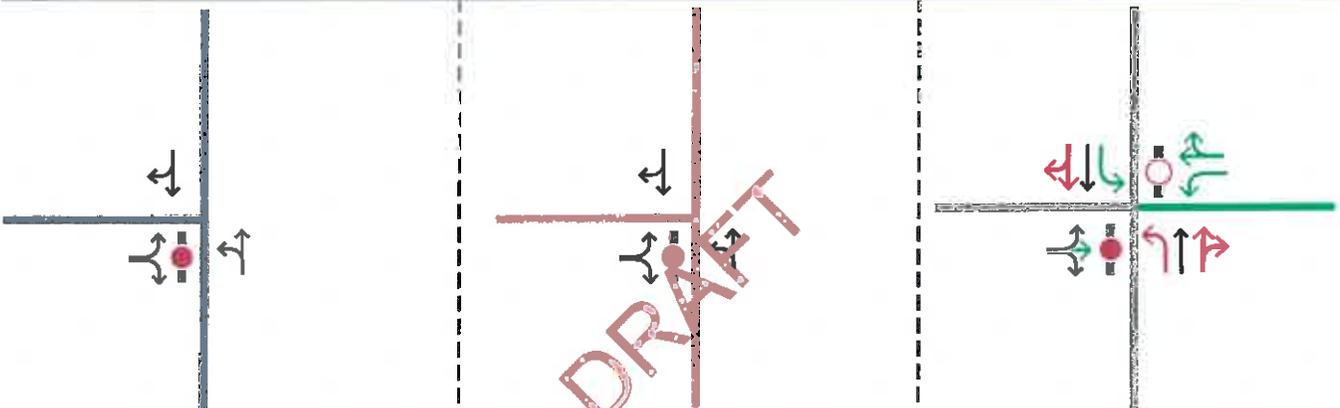
PHASE A (YEAR 2030)

FULL BUILDOUT (YEAR 2040)

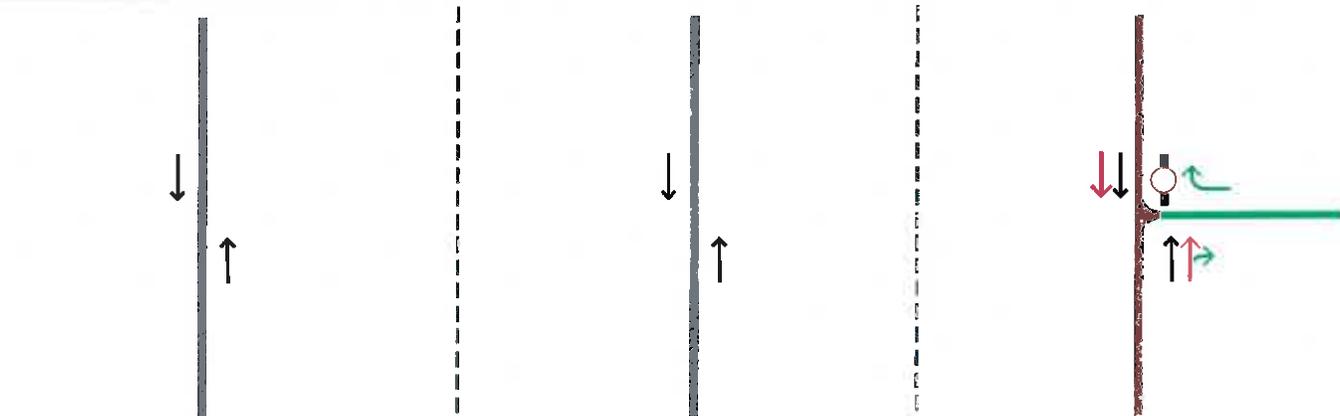
IL ROUTE 47 / SOUTH THORNAPPLE TREE ROAD / REALIGNED MERRILL ROAD



IL ROUTE 47 / OAKLEAF DRIVE / ACCESS A



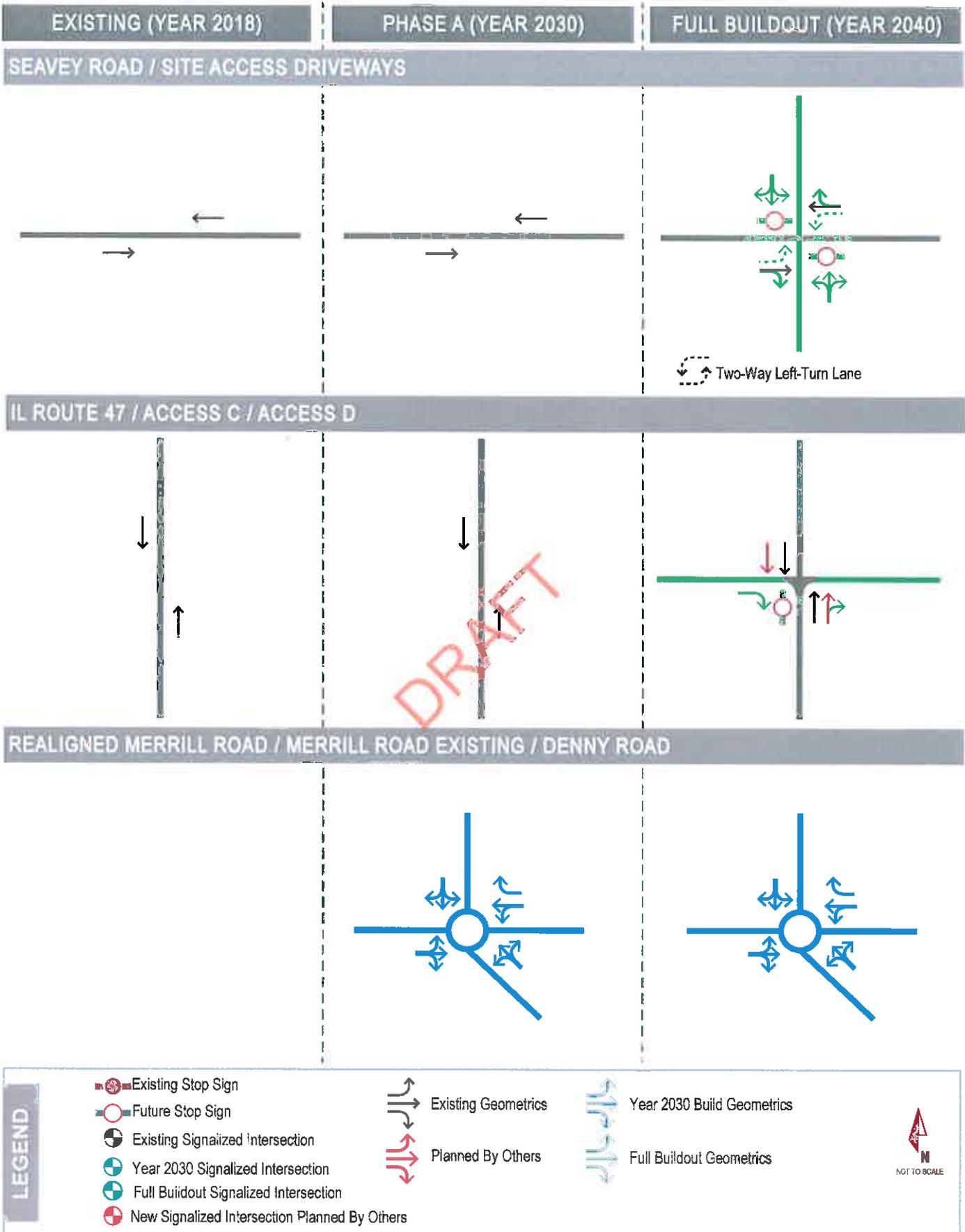
IL ROUTE 47 / ACCESS B



LEGEND

- Existing Stop Sign
- Future Stop Sign
- ⊕ Existing Signalized Intersection
- ⊕ Year 2030 Signalized Intersection
- ⊕ Full Buildout Signalized Intersection
- ⊕ New Signalized Intersection Planned By Others
- ↔ Existing Geometrics
- ↔ Planned By Others
- ↔ Year 2030 Build Geometrics
- ↔ Full Buildout Geometrics

NOT TO SCALE

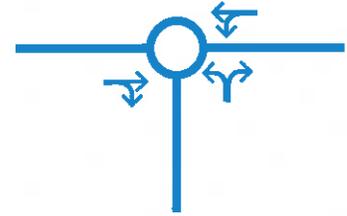
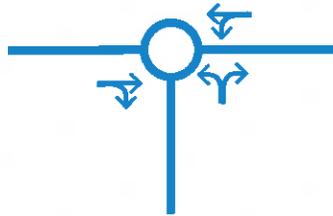


EXISTING (YEAR 2018)

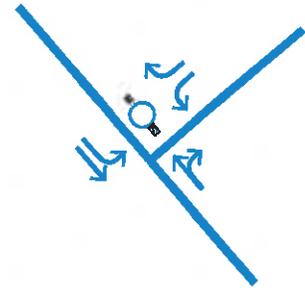
PHASE A (YEAR 2030)

FULL BUILDOUT (YEAR 2040)

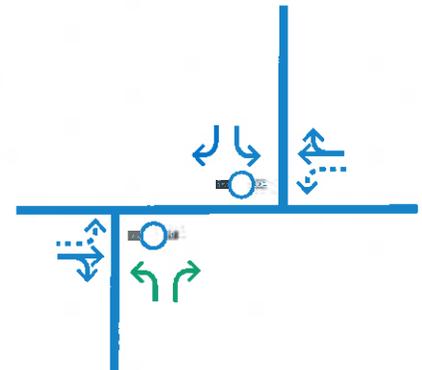
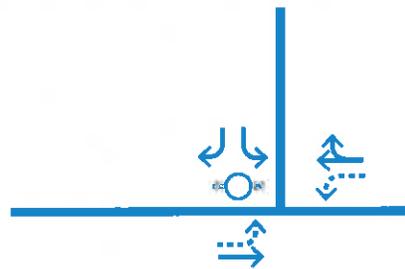
DENNY ROAD EXTENSION



DENNY ROAD / SITE ACCESS DRIVEWAYS



DENNY ROAD EXTENSION / SITE ACCESS DRIVEWAYS



Two-Way Left-Turn Lane

Two-Way Left-Turn Lane

LEGEND

Existing Stop Sign

Future Stop Sign

Existing Signalized Intersection

Year 2030 Signalized Intersection

Full Buildout Signalized Intersection

New Signalized Intersection Planned By Others

Existing Geometrics

Planned By Others

Year 2030 Build Geometrics

Full Buildout Geometrics



Table 15. Future (2040) Build Levels of Service

| Intersection | AM Peak Hour | | PM Peak Hour | |
|---|---------------|-----|---------------|-----|
| | Delay (s/veh) | LOS | Delay (s/veh) | LOS |
| IL Route 47 / Green Road △ | | | | |
| Westbound | >120 | F | >120 | F |
| Southbound (Left) | 10- | A | 12 | B |
| IL Route 47 / Oakleaf Drive / Access A △ | | | | |
| Eastbound | 53 | F | 103 | F |
| Westbound | 39 | E | >120 | F |
| Northbound (Left) | 10- | A | 11 | B |
| Southbound (Left) | 11 | B | 13 | B |
| IL Route 47 / Access B △ | | | | |
| Westbound | 12 | B | 15+ | C |
| IL Route 47 / Seavey Road * | | | | |
| Eastbound | 44 | D | 47 | D |
| Westbound | 47 | D | 48 | D |
| Northbound (Left) | 10- | A | 15 | B |
| Southbound (Left) | 8 | A | 13 | B |
| Intersection | 11 | B | 19 | B |
| IL Route 47 / Access C / Access D △ | | | | |
| Eastbound | 12 | B | 15- | B |
| IL Route 47 / I-88 WB Ramps * | | | | |
| Westbound | 42 | D | 43 | D |
| Northbound | 33 | C | 32 | C |
| Southbound | 14 | B | 14 | B |
| Intersection | 29 | C | 27 | C |
| IL Route 47 / I-88 EB Ramps * | | | | |
| Eastbound | 56 | E | 56 | E |
| Northbound | 16 | B | 15 | B |
| Southbound | 13 | B | 12 | B |
| Intersection | 19 | B | 17 | B |
| IL Route 47 / Finley Road △ | | | | |
| Eastbound | 14 | B | 19 | C |
| Northbound (Left) | 12 | B | 15+ | C |
| IL Route 47 / Access E △ | | | | |
| Westbound | 24 | C | 103 | F |
| Southbound (Left) | 15- | B | 23 | C |

* – Signalized Intersection △ – Minor-Leg Stop-Controlled Intersection ○ – Roundabout Intersection

Table 15. Future (2040) Build Levels of Service (continued)

| Intersection | AM Peak Hour | | PM Peak Hour | |
|--|---------------|-----|---------------|-----|
| | Delay (s/veh) | LOS | Delay (s/veh) | LOS |
| IL Route 47 / Scott Road / Denny Road * | | | | |
| Eastbound | 30 | C | 39 | D |
| Westbound | 28 | C | 44 | D |
| Northbound | 26 | C | 26 | C |
| Southbound | 12 | B | 19 | B |
| Intersection | 20- | B | 25 | C |
| IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road Δ | | | | |
| Eastbound | 18 | C | 40 | E |
| Westbound | 24 | C | 36 | E |
| Northbound (Left) | 10- | A | 12 | B |
| Southbound (Left) | 12 | B | 14 | B |
| Denny Road / Realigned Merrill Road / Merrill Road Existing ○ | | | | |
| Eastbound | 6 | A | 6 | A |
| Westbound | 2 | A | 1 | A |
| Northbound | 6 | A | 6 | A |
| Southbound | 7 | A | 6 | A |
| Intersection | 6 | A | 5 | A |
| Denny Road / Zone E Access (Turnaround) ○ | | | | |
| Eastbound | 3 | A | 4 | A |
| Westbound | 3 | A | 3 | A |
| Northbound | 3 | A | 4 | A |
| Intersection | 3 | A | 4 | A |
| IL Route 47 / Old Oaks Road / College Drive * | | | | |
| Eastbound | 38 | D | 38 | D |
| Westbound | 37 | D | 35- | C |
| Northbound | 7 | A | 7 | A |
| Southbound | 5 | A | 8 | A |
| Intersection | 6 | A | 9 | A |

* – Signalized Intersection Δ – Minor-Leg Stop-Controlled Intersection ○ – Roundabout Intersection

As shown, with the identified improvements northbound and southbound through traffic on IL Route 47 is expected to operate at LOS C or better, consistent with IDOT requirements for an SRA route.

At the intersection of IL Route 47/I-88 Westbound Ramps, the overall intersection is projected to operate at LOS C during each peak hour. The projected 95th percentile queues for the westbound left-turn movement are approximately 11 vehicles (275 feet) during the morning peak hour and 12 vehicles (300 feet) during the evening peak hour, which would be accommodated within the dual left-turn storage lanes. The westbound right-turn movement is projected to have a 95th percentile queue of approximately 19 vehicles (475 feet) during the morning peak hour and 18 vehicles (450 feet) during the evening peak hour. During each peak hour, the queue would exceed the 350-foot storage lane; however, queue spillback to the I-88 mainline travel lanes is not anticipated. The delay projected for the westbound approach is largely attributable to the cycle length (120 seconds) and priority given

to north-south traffic on IL Route 47. As a result, long periods of green time are allocated to the north-south through movements and the westbound off-ramp receives relatively short green times.

The intersection of IL Route 47/I-88 Eastbound Ramps is projected to operate at LOS B during both peak hours. During the morning peak hour, the 95th percentile queues for the eastbound left- and right-turn lanes are projected to be ten vehicles (250 feet) and four vehicles (100 feet), respectively. During the evening peak hour, the 95th percentile queues for the eastbound left- and right-turn movements are approximately five vehicles (125 feet) and seven vehicles (175 feet), respectively. Based on the IDS, approximately 240 feet of storage is planned for the eastbound left-turn movement; therefore, queue spillback to the I-88 mainline travel lanes is not anticipated.

At the intersection of IL Route 47 at South Thornapple Tree Road/Realigned Merrill Road, the northbound and southbound left-turn movements are projected to operate at LOS B or better during each peak hour. The east- and westbound approaches are projected to operate at LOS C during the morning peak hour. The eastbound and westbound approaches are projected to operate at LOS C during the morning peak hour and LOS E during the evening peak hour. In the morning peak hour, the projected 95th percentile queues for the westbound left- and right-turn movements are less than approximately two vehicles (50 feet). The 95th percentile queue for the northbound and southbound left-turn movements is approximately one vehicle (25 feet) or less. During the evening peak hour, the 95th percentile queues for the westbound left- and right-turn movements are approximately three vehicles (75 feet) or less. The northbound and southbound left-turn movements are projected to have 95th percentile queues of approximately two vehicles (50 feet) or less.

At several stop-controlled intersections, the minor-leg approaches are projected to operate with high delay. The projected delay is not uncommon for stop-controlled minor streets at intersections with heavily-traveled arterial roadways such as IL Route 47. At the proposed site access driveways, the 95th percentile queues are approximately one vehicle (25 feet) or less during the morning peak hour. During the evening peak hour, the 95th percentile queues are similar, with the exception of Access A and Access E. Access A is projected to have a queue of approximately six vehicles (150 feet) for the outbound left-turn movement; the projected queue for the right-turn movement is one vehicle (25 feet). Access E is projected to have a queue of approximately seven vehicles (175 feet) for the left-turn movement and three vehicles (75 feet) for the right-turn movement. During both peak hours, the roundabouts are projected to operate at an overall LOS A with each approach operating with limited delay.

RECOMMENDATIONS & CONCLUSIONS

Based on an evaluation of existing and future traffic conditions, the following recommendations were identified to manage projected traffic demand within the study area under the Year 2030 Build scenario. The improvements identified for the Year 2030 scenario are summarized below and depicted in Exhibit 13a through Exhibit 13e. The preliminary improvements contemplated for the Year 2040 scenario are also shown in the exhibits.

- **IL Route 47 / I-88 Westbound Ramps**
 - Per the results of the warrant analysis, install a traffic signal.
 - Restripe the east leg to facilitate dual left-turn lanes. Per the IDS, the turn lanes should provide 255 feet of storage.
- **IL Route 47 / Scott Road / Denny Road**
 - Construct Denny Road. A three-lane cross-section with a single travel lane in each direction should be provided.
 - Per the results of the signal warrant analysis, install a traffic signal.
 - Install a dedicated left-turn lane on the north and south legs. The turn lanes should provide 265 feet of storage with a 265-foot taper.
 - Provide a dedicated left-turn lane and a shared through/right-turn lane on both the east and west legs of the intersection. Based on a design speed of 30 MPH on Scott Road (25 MPH posted speed limit), the left-turn lane on the west leg should provide 115 feet of storage with a 135-foot taper. Based on an assumed design speed of 35 MPH for Denny Road (30 MPH posted speed limit), the left-turn lane on the east leg should provide 125 feet of storage with a 155-foot taper.
- **IL Route 47 / South Thornapple Tree Road / Realigned Merrill Road**
 - Realign Merrill Road opposite South Thornapple Tree Road. A single travel lane should be provided in each direction. At its intersection with IL Route 47, Merrill Road should operate under minor-leg stop-control.
 - Install a shared left-turn/through lane and a dedicated right-turn lane on the east leg. Based on an assumed design speed of 35 MPH on Realigned Merrill Road, the right-turn lane should provide 125 feet of storage with a 155-foot taper.
 - Install dedicated left-turn lanes on the north and south legs. The turn lanes should provide 265 feet of storage with a 265-foot taper.
- **Denny Road / Realigned Merrill Road / Merrill Road Existing**
 - Install a roundabout in order to enhance safety conditions and reduce travel speeds.
 - The roundabout should be designed to accommodate trucks and provide a single shared lane on each approach. A dedicated slip lane should be provided on the east leg in order to facilitate westbound right-turn movements, including site-generated truck and passenger vehicle trips, without entering the roundabout.

- **Denny Road Extension**

- Extend Denny Road to the eastern project boundary in order to facilitate access to Zone E and provide for future regional connectivity.
- A three-lane cross-section with a single travel lane in each direction should be provided along Denny Road Extension.
- Install a roundabout near the eastern terminus of Denny Road in order to:
 - Reduce travel speeds on Denny Road Extension;
 - Minimize cut-thru traffic in the future residential neighborhood to the south; and
 - Provide a turnaround for wayward trucks.
- The roundabout should be designed to accommodate trucks and provide a single shared lane on each approach.

Regardless of the final configuration of the intersection geometrics, several additional items should be taken into consideration when preparing roadway improvement plans for the proposed access points. In order to minimize impacts to vertical sight distance at the proposed site access driveways, care should be taken with landscaping, signage, and monumentation at the existing and proposed access locations to ensure that adequate horizontal sight distance is provided from the new stop bars. If alterations to the site plan or land uses should occur, changes to the analysis within this traffic impact study may be necessary.

DRAFT

APPENDIX

Conceptual Site Plan

CMAP Growth Projections

Data from the ITE manual Trip Generation, Tenth Edition

Data from the ITE Trip Generation Handbook, Third Edition

Intersection Design Study (IDS) for IL Route 47 and Interstate 88 Ramps

Traffic Count Data

Existing (Year 2018) Capacity Reports

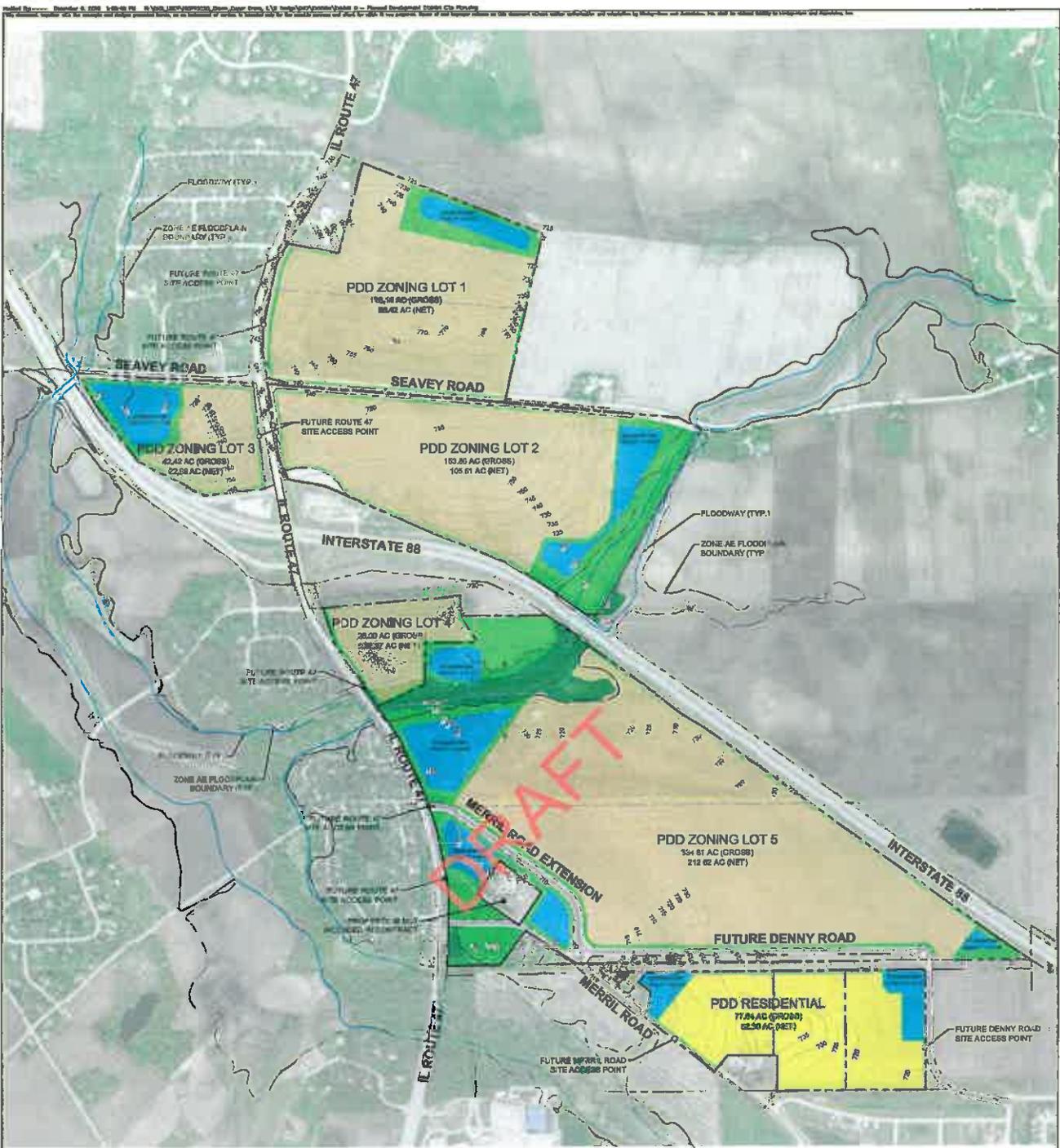
Phase A (Year 2030) Capacity Reports

Full Buildout (Year 2040) Capacity Reports

DRAFT

CONCEPTUAL SITE PLAN

DRAFT



- LEGEND**
- EXISTING PROPERTY BOUNDARY
 - EXISTING ROW
 - PROPOSED ROW
 - FEMA FLOODWAY BOUNDARY
 - FEMA ZONE AE FLOODPLAIN BOUNDARY
 - PDD NON-RESIDENTIAL ZONING AREA
 - PDD RESIDENTIAL ZONING AREA
 - PROPOSED PUBLIC ROADWAY
 - PROPOSED PUBLIC RIGHT-OF-WAY
 - PRIVATE OPEN SPACES/BUFFERS
 - WETLAND
 - PRIVATE PARKS
 - STORMWATER MANAGEMENT FACILITY



PDD AREA SUMMARY

| NEIGHBORHOOD | GROSS AREA | R.O.W. | STORMWATER FACILITY | GREEN SPACE | PRIVATE PARK | OPEN SPACE* | NET AREA | PERCENT OF OPEN SPACE |
|--------------------|------------------|-----------------|---------------------|------------------|----------------|------------------|------------------|-----------------------|
| PDD ZONING LOT 1 | 126.14 AC | 5.89 AC | 6.10 AC | 17.84 AC | - | 23.83 AC | 86.42 AC | 18.9% |
| PDD ZONING LOT 2 | 168.88 AC | 7.17 AC | 10.8 AC | 30.80 AC | - | 41.68 AC | 105.61 AC | 26.7% |
| PDD ZONING LOT 3 | 42.42 AC | 1.77 AC | 10.11 AC | 7.58 AC | - | 17.88 AC | 22.89 AC | 41.7% |
| PDD ZONING LOT 4 | 28.00 AC | 0.00 AC | 0.00 AC | 8.48 AC | - | 3.48 AC | 22.87 AC | 15.3% |
| PDD ZONING LOT 5 | 334.81 AC | 13.99 AC | 27.87 AC | 80.39 AC | - | 108.30 AC | 212.62 AC | 32.3% |
| PDD RESIDENTIAL | 77.84 AC | 0.58 AC | 3.28 AC | 3.88 AC | 2.28 AC | 14.75 AC | 62.30 AC | 10.0% |
| SITE TOTALS | 700.87 AC | 29.41 AC | 83.23 AC | 143.46 AC | 2.28 AC | 206.86 AC | 522.48 AC | 27.5% |

*OPEN SPACE IS THE SUMMATION OF STORMWATER FACILITY, GREEN SPACE, AND PRIVATE PARK AREAS.

CROSSROADS CORPORATE CENTER & ASTORIA
 PLANNED DEVELOPMENT DISTRICT
 SUGAR GROVE, IL

Kimley»Horn
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 1001 WARRENVILLE ROAD, SUITE 350, LISLE, IL 60532
 PHONE: 630-487-5550 WWW.KIMLEY-HORN.COM

CMAP GROWTH PROJECTIONS

DRAFT

DATA FROM THE ITE MANUAL TRIP GENERATION, TENTH EDITION

DRAFT

DATA FROM THE ITE TRIP GENERATION HANDBOOK, THIRD EDITION

DRAFT

**INTERSECTION DESIGN STUDY (IDS) FOR IL ROUTE 47 /
INTERSTATE 88 RAMPS**

DRAFT

TRAFFIC COUNT DATA

DRAFT

EXISTING CAPACITY REPORTS

Weekday Morning Peak Hour

Weekday Evening Peak Hour

DRAFT

PHASE A (YEAR 2030) CAPACITY REPORTS

DRAFT

Weekday Morning Peak Hour

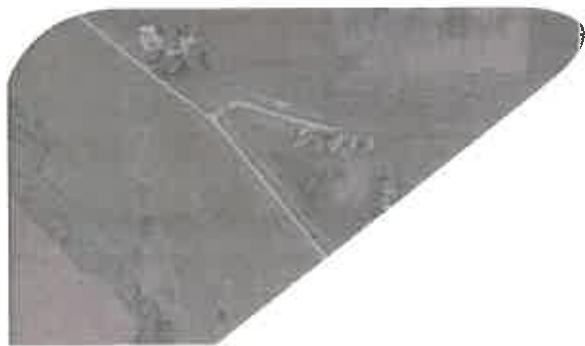
Weekday Evening Peak Hour

FULL BUILDOUT (YEAR 2040) CAPACITY REPORTS

DRAFT

Weekday Morning Peak Hour

Weekday Evening Peak Hour



Kimley»»Horn

1001 Warrenville Road | Suite 350 | Lisle, IL | 60532
630-487-5550

Kane – DuPage Soil & Water Conservation District



November 1, 2018

Village of Sugar Grove
Renee Hanlonn
601 N Heartland Dr
Sugar Grove, IL 60554

We have assigned number 18-107 to a Land Use Opinion Applications from:

Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563

The site location is:

Burlington and Sugar Grove Townships
Sections 4, 5, 29, 30, 31, 32, 33, Township 38 & 39N, Range 7E

The application was sent to us in compliance with Section 22.02a of the Illinois Soil and Water Conservations Districts Act.

 X Our review and comments will be sent on or before December 3, 2018.

 According to the information received, a full Land Use Opinion report is not required at this time. Therefore, no further action will be taken by the Soil and Water Conservation District Board.

Sincerely,

Jennifer Shroder
Resource Assistant

NOV - 1 2018

LAND USE OPINION APPLICATION
Kane-DuPage Soil and Water Conservation District
2315 Dean Street, Suite 100, St. Charles, IL 60175-4823
(630) 584-7960 Ext. 3

| FOR OFFICE USE ONLY | |
|-------------------------------------|-------------------------|
| LUO# <u>18-107</u> | Date Due <u>12/1/18</u> |
| Date initially rec'd <u>11/1/18</u> | |
| Date all rec'd <u>11/1/18</u> | Date completed _____ |
| Fee Paid <u>\$ 12,156.00</u> | Refund Due _____ |
| By <u>Sugar Grove LLC</u> | Overpayment _____ |
| <u>1751 A West Dahl Rd</u> | No Report Neo _____ |
| <u>Naperville IL 60563</u> | Gov't Agency _____ |

Send report to:
PETITIONER: Crown Community Development
ADDRESS: 1751 A West Dahl Road
Naperville, IL 60563
EMAIL: dolsam@crown-chicago.com

CONTACT PERSON: Daniel J. Olson, P.E.
TELEPHONE: (630) 851-5490
Please allow **30 days** for inspection and processing.

Location:
Township Blackberry and Sugar Grove
Section(s) 4, 5, 29, 30, 31, 32, 35
Township(s) 38, 39 N Range(s) 7 E

TYPE OF PROPOSAL: Change in Zoning from E-1 to PDD Project or Subdivision Name Crown Industrial - Sugar Grove
 Subdivision or Planned Unit Development (PUD)
 Variance-Please describe fully on separate sheet
 Special Use Permit-Please describe fully on separate sheet

Unit of Government Responsible for Permits Sugar Grove Date of Public Hearing 01/18/19
Current Use of Site Agricultural Proposed Use Industrial, Residential, Commercial
Surrounding Land Use Agricultural, Residential Number of Acres 60.07
Location address (or nearest intersection) NWC, SEC. & SEC OF I-88 & IL-47. (See attached site plan for reference)

PROPOSED IMPROVEMENTS: (check all applicable items)

Planned Structures:
 Dwellings w/o Basements
 Dwellings with Basements
 Commercial Buildings
Other residential

Open Space:
 Park/Playground Areas
 Common Open Space Areas
Other _____

Water Supply:
 Individual Wells
 Community Water

Wastewater Treatment:
 Septic System
 Sanitary Sewers
 Other _____

Stormwater Treatment:
 Drainage Ditches or Swales
 Storm Sewers
 Dry Detention Basin

Wet Retention Basin
 No Detention Facilities Proposed
 Other Naturalized Detention

EXISTING SITE CHARACTERISTICS: (check all applicable items)

Ponds or Lakes Floodplain Woodland Drainage Tiles Stream(s)
 Wetland(s) Floodway Cropland Disturbed Land Other _____

REQUIRED: INCLUDE ONE COPY EACH OF THE FOLLOWING-Processing will not begin without the following:

- APPLICATION completed and signed
- FEE according to schedule below
- PLAT OF SURVEY/SITE PLAN showing legal description, legal measurements
- SITE /CONCEPT PLAN showing lots, streets, storm water detention areas, open areas, etc.
- LOCATION MAP (if not on maps above)-include distances from major roadways or tax parcel number

IF AVAILABLE - NOT REQUIRED:

- ZONING or LAND USE PETITION filed with unit of government (if relevant)
- TOPOGRAPHY MAP OR WETLANDS DELINEATIONS

FEE AMOUNTS: last updated November 1, 2013

\$423.00 for 1 - 3 acres or fraction thereof
\$459.00 for 4 - 5 acres or fraction thereof
For 5 - 200 acres see chart

> 200 acres: ADD \$14.00 for each additional acre or fraction thereof over the 200 acre amount.
\$65.00 processing fee if no report is required

***If there is more than one parcel in question and they are non-contiguous please contact KDSWCD for fee amount. ***

MAKE CHECKS PAYABLE TO: Kane-DuPage Soil and Water Conservation District

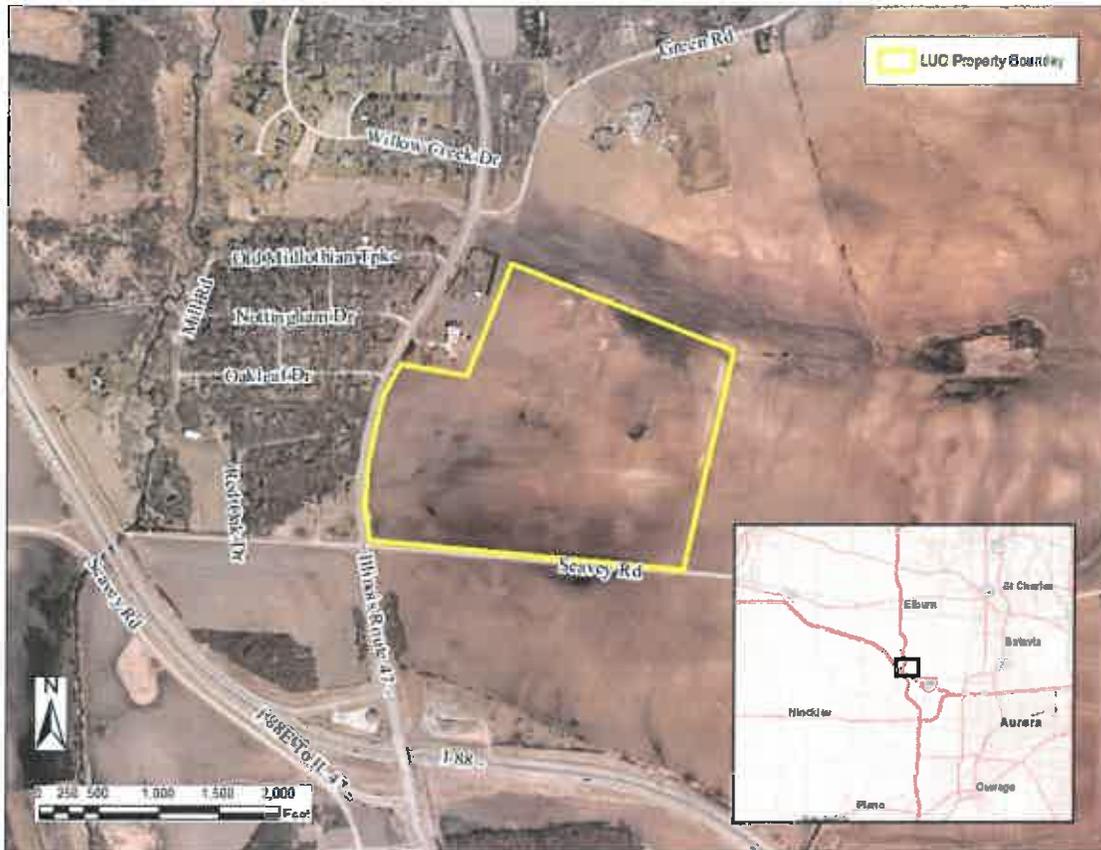
I (we) understand the filing of this application allows the authorized representative of the Kane-DuPage Soil and Water Conservation District to visit and conduct an evaluation of the site.

Petitioner or Authorized Agent [Signature] Date 10/2/18

This opinion will be issued on a non-discriminatory basis without regard to race, color, religion, sex, age, marital status, handicap, or national origin.

**KANE-DUPAGE
SOIL AND WATER CONSERVATION DISTRICT**

**LAND USE OPINION
18-107A**



December 3, 2018

**Prepared for:
Village of Sugar Grove**

**Petitioner:
Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563**

Petitioner: Crown Community Development, 1751 A West Diehl Rd, Naperville, IL 60563

Contact Person: Daniel J. Olsem, 630-851-5490

Unit of Government Responsible for Permits: Village of Sugar Grove

Acreage: 124.93

Property Address/PIN#: 2S687 Route 47, Sugar Grove

Existing Land Use: Agriculture

Surrounding Land Use: Agricultural

Proposed Land Use: Residential/Commercial

Natural Resource Concerns

Land Cover in the Early 1800's: This site is located in an area previously identified as prairie. (See page 2 for more information.)

Kane County Green Infrastructure Plan: This site is located in an area indicated as Environmental Resource Area (with buffer). (See page 3.)

Wetlands: The National Wetland Inventory map does not identify wetland areas on this site. However, the ADID wetland map identifies a High Functional Value wetland area. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of any wetlands. (See page 4 & 5 for more wetland information.)

Floodplain: There are no floodplain areas identified on this site. (See page 7.)



Streams: There are no streams on this site. (See page 8.)

Regulations: Please note that additional permits are required for any development impacting wetlands, streams or floodplain areas. Please see page 9 for regulation information.

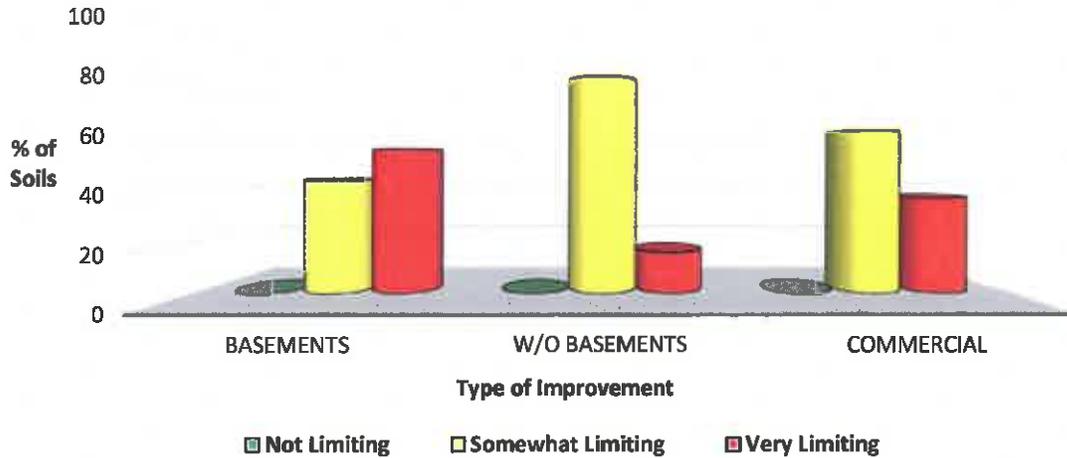
Aquifer Sensitivity: This site is classified as having a moderate to moderately high potential for aquifer contamination. (See page 10.)

Topography and Drainage: Please refer to page 11 for information regarding site topography and drainage.

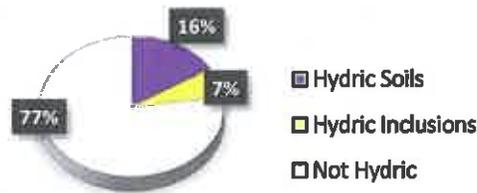
Stormwater: See page 13 for information regarding stormwater management.

Soil Erosion: Any development on this site should include a soil erosion and sediment control plan. (See page 13.)

Building Limitations: Soils at this site may contain limitations for dwellings with basements, dwellings without basements, and small commercial buildings. See page 15 and attached Soils Tables located on the final pages this report. All information is from the Soil Survey of Kane County, Illinois.



Hydric Soils: There are hydric soils and soils with hydric inclusions identified on this site. (See page 16.)



LESA-Prime Farmland: Sites with a score of 26-33 or greater on the Land Evaluation (LE) portion of the LESA score are considered to have high value farmland soils. This site has a score of 28 placing it within the definition of high value soils/prime farmland. (See Page 17 for more information.)

LAND USE OPINION

Land Use Opinion: The most current natural resource data indicates the following concerns for this site: **Wetlands, Soil Limitations, Aquifer Sensitivity, LESA – Prime Farmland, Soil Erosion and Sediment Control, and Stormwater Management.** Based on the information in this report, it is the opinion of the Kane-DuPage Soil and Water Conservation District Board that this site **may not be suited** for land use change **unless** the previously mentioned concerns are addressed.

SITE INSPECTION

A site inspection was conducted by Resource Assistant, Jennifer Shroder on November 29, 2018. The following photos were taken during this inspection and reflect the site conditions at that time.



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PURPOSE AND INTENT

This report presents natural resource information to officials of the local governing body and other decision makers. Decisions concerning variations, amendments or relief of local zoning ordinance may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands because of these decisions may reference this report. This report is a requirement under the Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report intends to present the most current natural resource information available in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other. This information comes from standardized data, on-site investigations and other information furnished by the petitioner.

Please read the entire report to coordinate and interrelate all natural resource factors considered. This report, when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county.

The conclusion of this report in no way indicates the impossibility of a certain land use. However, it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Please direct technical questions about data supplied in this report to:

Kane-DuPage
Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175
Phone: (630) 584-7960

LAND COVER IN THE EARLY 1800'S

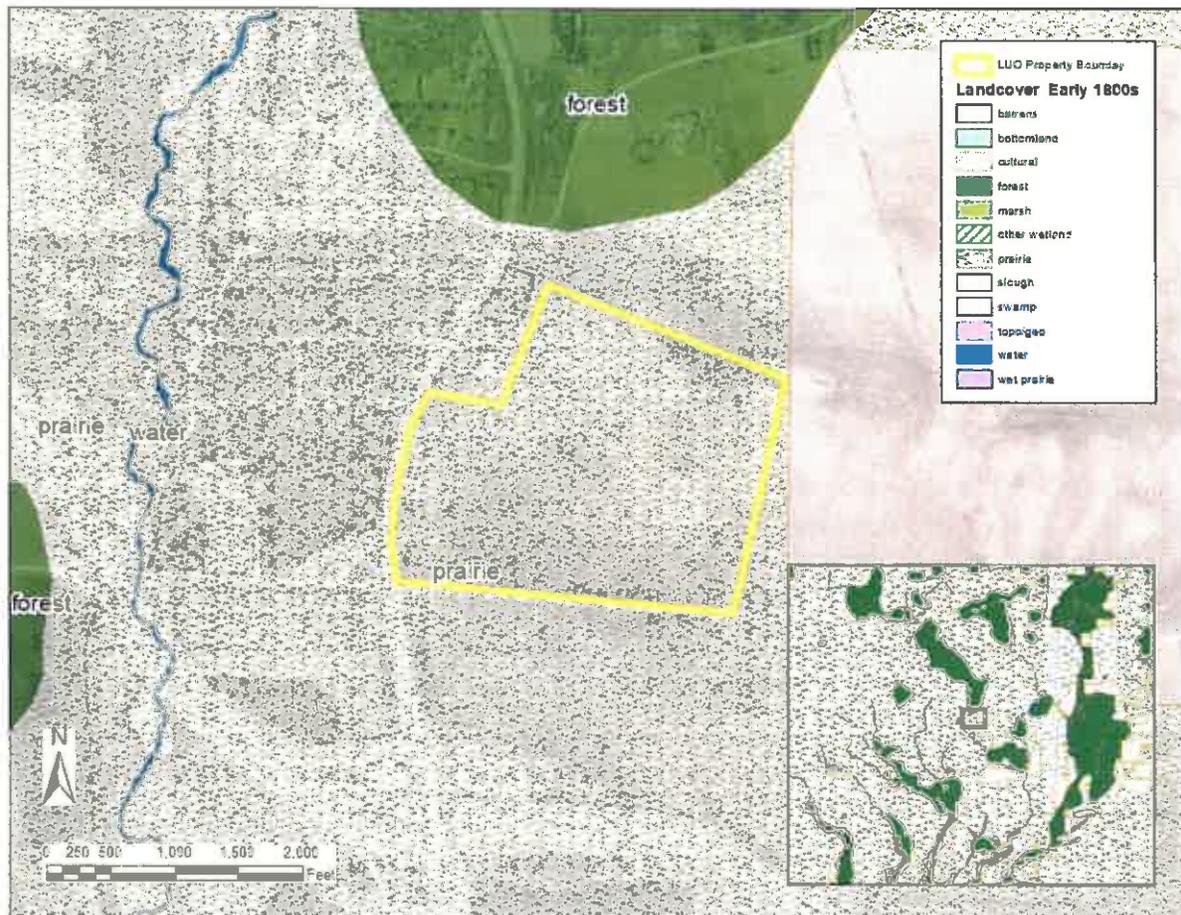


Figure 1: Land Cover in the Early 1800's

Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.

These surveys represent one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. They predate our county land ownership maps and atlases. These plat maps and field notebooks contain a wealth of information about what the landscape was like before the flood of settlers came into the state.

The vast majority of the landscape of Illinois in the early 1800's consisted of two different natural resource areas. These two areas were prairie and forest. Prairie and woodland ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities

- improve soil health and reduce soil loss
- improve air and water quality

Other designations include, cultural (or agricultural area), marsh, wet prairie, wetland, barrens and water. Please note that these designations are based on surveys taken in the early 1800's, and may not represent exact site conditions.

This site is located in an area surveyed as prairie on the land cover in the early 1800's map. The District recommends preserving as much as of the natural character of the site as possible during this land use change. It is also recommended that native plants be utilized for landscaping whenever possible. Removal of invasive species is also encouraged.

GREEN INFRASTRUCTURE

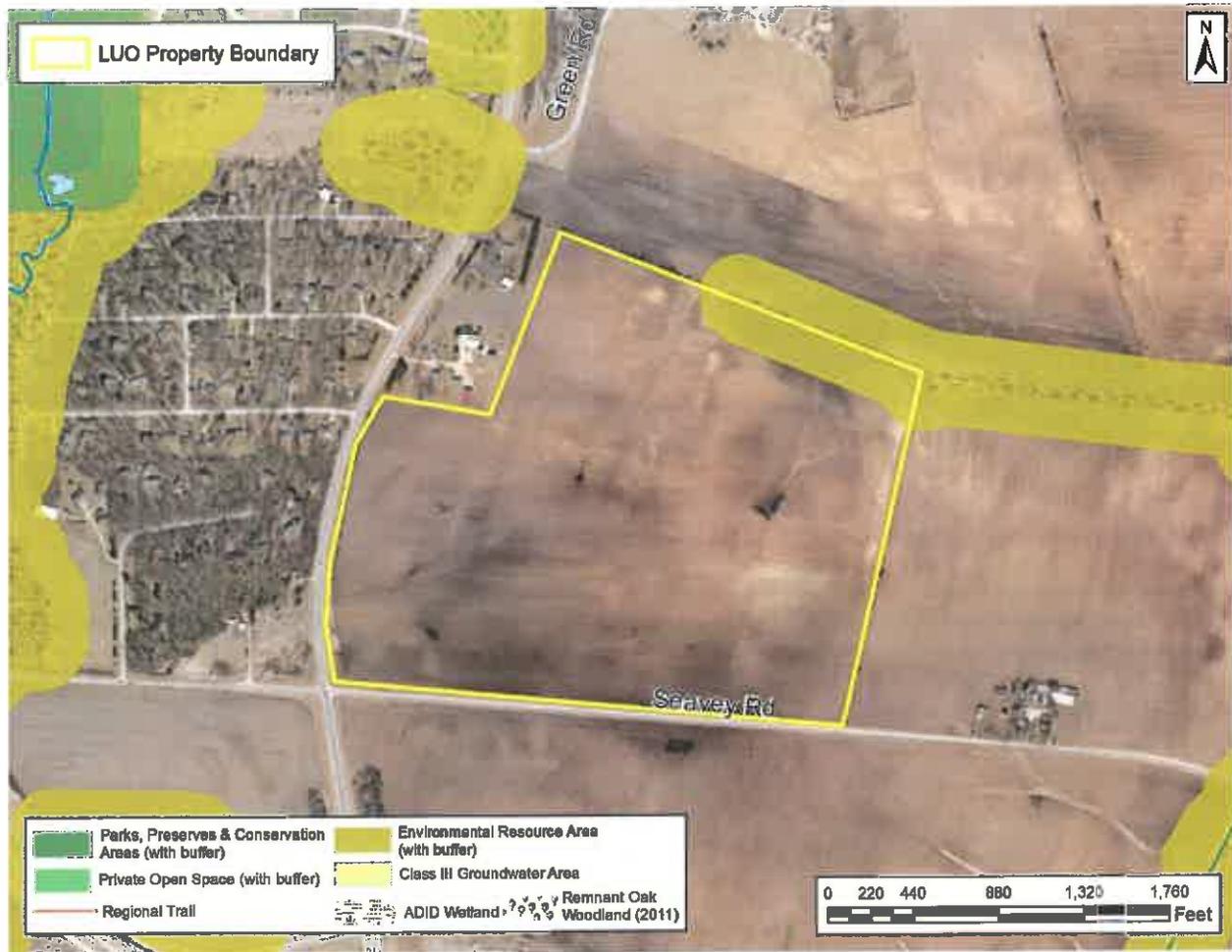


Figure 2: Kane County Green Infrastructure Plan

County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.

From the Kane County Green Infrastructure Plan, "Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County 2040 Green Infrastructure Plan includes analysis of existing natural resources in the County and recommendations for green infrastructure priorities and approaches. The ultimate goal of the Kane County 2040 Green infrastructure Plan is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood and site levels."

The benefits of green infrastructure include:

- Preservation of habitat and biodiversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority areas as designated on the Kane County 2040 Green Infrastructure Plan: Environmental Resource Area with buffer.

NWI WETLANDS

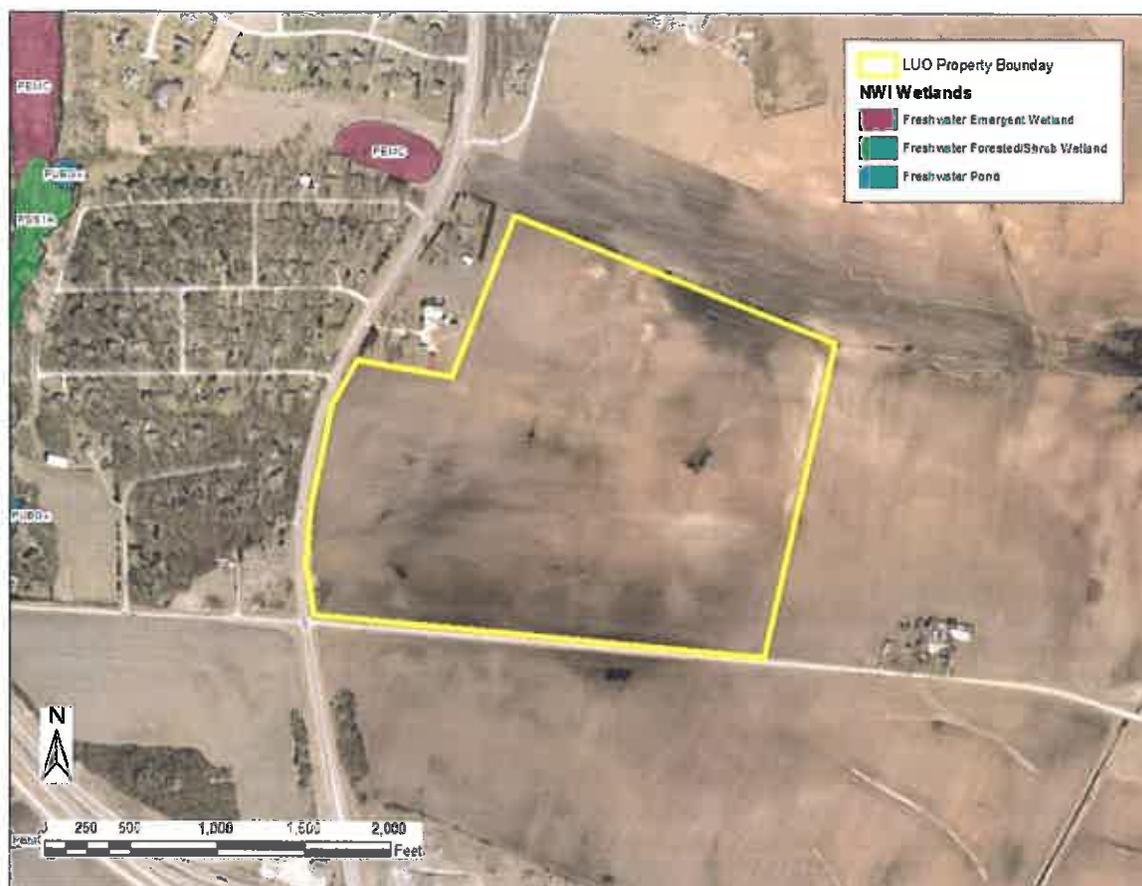


Figure 3: National Wetland Inventory Map

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Photo Year 1983-1984, Digitized 1985-1986.

Wetlands are some of the most productive and diverse ecological systems on earth. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Some other common wetlands located in this part of Illinois are fens and wet meadows.

Wetlands function in many ways to benefit mankind. Some of their many functions and benefits include:

- Controlling flooding by offering a slow release of excess water downstream or through the soil.

- Cleansing water by filtering out sediment and pollutants.
- Functioning as rechargers of our valuable groundwater.
- Providing essential breeding, rearing, and feeding grounds for many species of wildlife.

A review of the National Wetland Inventory Map indicates that wetlands do not appear to exist on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change. A wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of these wetlands. Please see page 8 for wetland regulation information.

ADID WETLANDS

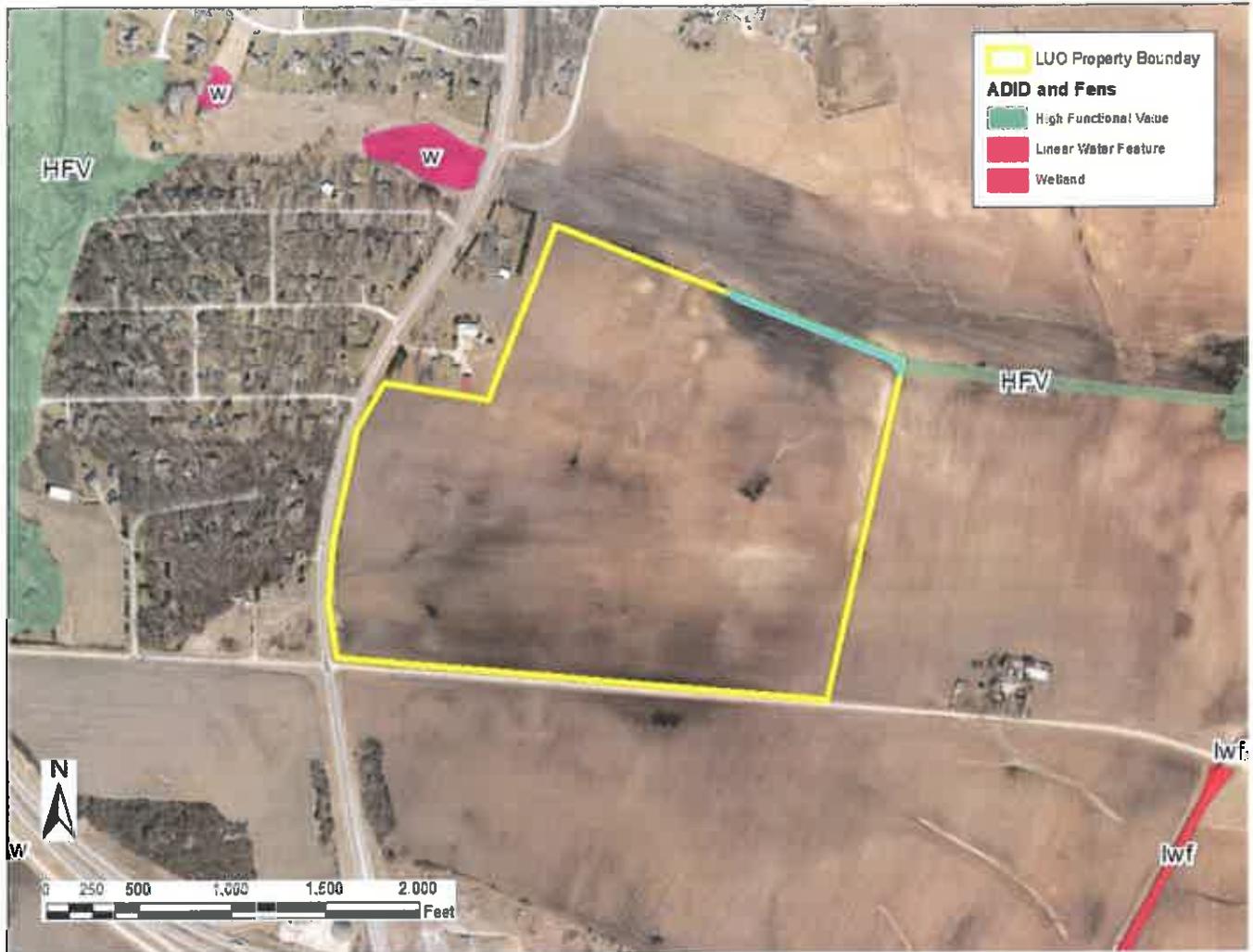


Figure 4: ADID Wetlands

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Released in August of 2004, the Kane County Advanced Identification of Aquatic Resources (or ADID) study is a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in the county. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This infor-

mation can be used by federal, state, and local governments to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration, acquisition, or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the full Kane County ADID study at : <http://dewprojects.countyofkane.org/adid/index.htm>

An ADID wetland was identified on this site. This wetland has been designated as having a high functional value.

WETLANDS PHOTOS



Figure 5: Wetlands photos



Point 1: Facing west-northwest



Point 2: Facing northwest

FLOODPLAIN

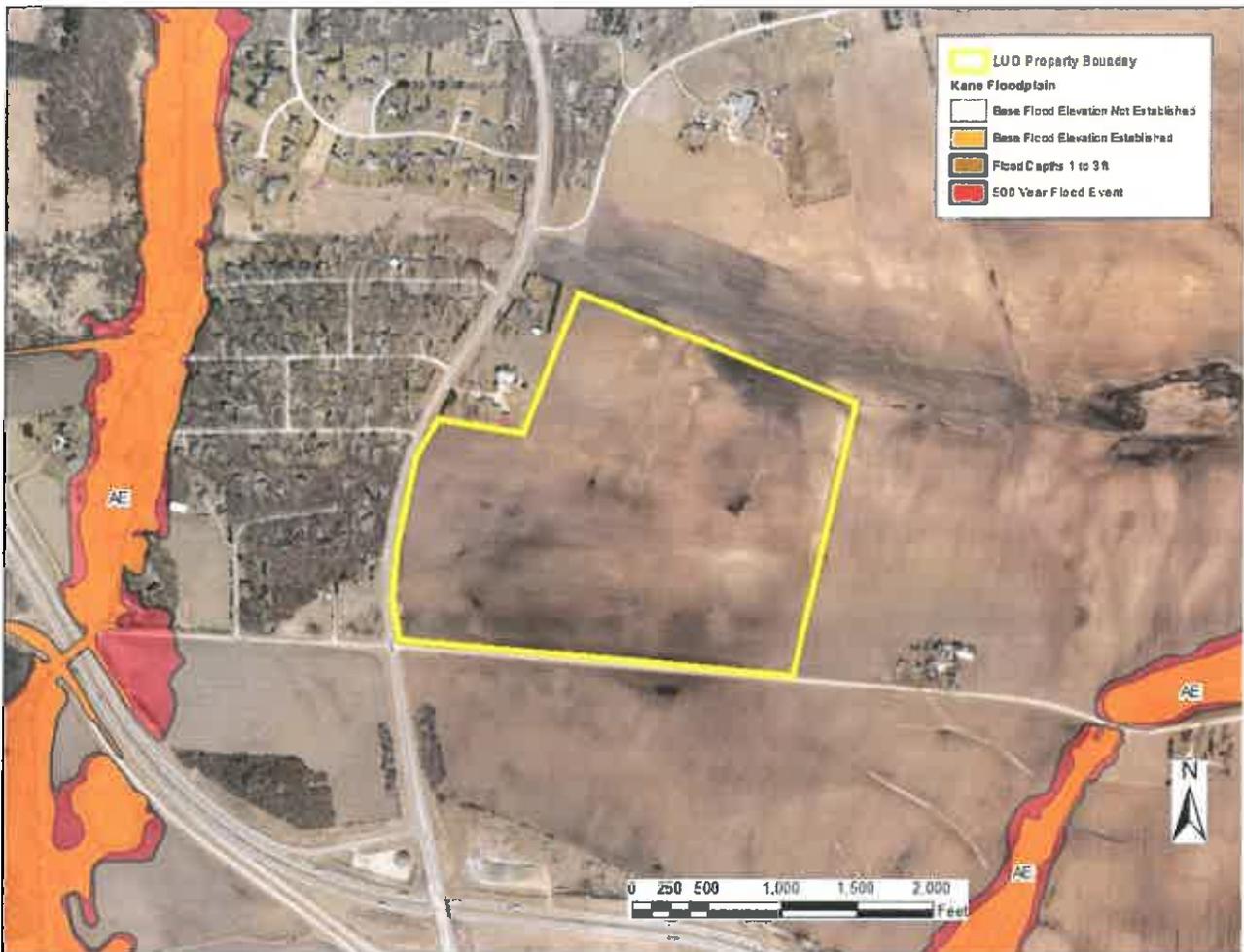


Figure 6: Floodplain Map

Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.

From FEMA's Floodplain Natural Resources and Functions Chapter 8, "Undeveloped floodplain land provides many natural resources and functions of considerable economic, social and environmental value. Nevertheless, these and other benefits are often overlooked when local land-use decisions are made. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment."

There are so many benefits of the floodplain that not all can be listed here, but the following is a general list of benefits and functions:

- natural flood storage and erosion control
- water quality maintenance
- groundwater recharge
- nutrient filtration
- biological productivity/wildlife habitat
- recreational opportunities/aesthetic value

According to the Flood Insurance Rate Map, no part of this site is within the boundaries of a 100-year floodplain. This development should not impede the beneficial functions of the floodplain. Please see 8 for information regarding floodplain regulations.

STREAMS AND WATERSHED MANAGEMENT

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA– Nonpoint Source Pollution).

The Illinois Environmental Protection Agency provides the following in regards to nonpoint source pollution, “Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of or sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification.”

Local watershed management planning is an important effort that involves citizens of a watershed in the protection of their local water resources. Water quality is a reflection of its watershed.

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage

- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

There are many subwatershed plans that have already been developed in Kane County. Please follow the link to the Kane County 2040 Green Infrastructure Plan. See page 108 for a list of local watershed plans.

<http://countyofkane.org/FDER/Pages/development/planning.aspx>

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a “dead zone” located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois’s Plan for reducing nutrient loss here:

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy/index>

REGULATORY INFORMATION

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat As well as recreational resources. Unregulated use of waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

REGULATORY AGENCIES:

Wetland/U.S. Waters: U.S. Army Corps of Engineers, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312) 353-6400.

<http://www.lrc.usace.army.mil/>

Wetland/Isolated: Kane County Water Resources Division, 719 Batavia Avenue, Geneva, IL 60134. (630)232-3400.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/water.aspx>

Floodplains: Illinois Department of Natural Resources\Office of Water Resources, 2050 W. Stearns Road, Bartlett, IL 60103. (847)608-3100.

<https://www.dnr.illinois.gov/WaterResources/Pages/Permit%20Programs.aspx>

Who Must Apply:

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, floodplain or floodway subject to State or Federal regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

NPDES General Construction Permit ILR10: Illinois Environmental Protection Agency, Division of Water Pollution Control, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794. (217)782-0610.

<http://www.epa.illinois.gov/topics/forms/water-permits/storm-water/construction/index>

Coordination: We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate/compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stage. This could reduce time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

AQUIFER SENSITIVITY



Figure 6: Aquifer Sensitivity Map

Dey, W.S., A.M. Davis, and B.B. Curry 2007, *Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS*

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as “a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer.”

Aquifers function as a storage area for groundwater recharge, which makes them a reliable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. This site is classified as having a moderate potential for contamination.

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

| | | | |
|-----------|---|-----------|---|
| A1 | Aquifers are greater than 50ft thick and within 5ft of the surface | C1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| A2 | Aquifers are greater than 50ft thick and between 5 and 20ft below the surface | C2 | Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface |
| A3 | Aquifers are between 20 and 50ft thick and within 5ft of the surface | C3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface |
| A4 | Aquifers are between 20 and 50ft thick and between 5 and 20ft below the surface | D1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| B1 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface | D2 | Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface |
| B2 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface | D3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface |
| E1 | Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface | | |

TOPOGRAPHY AND DRAINAGE

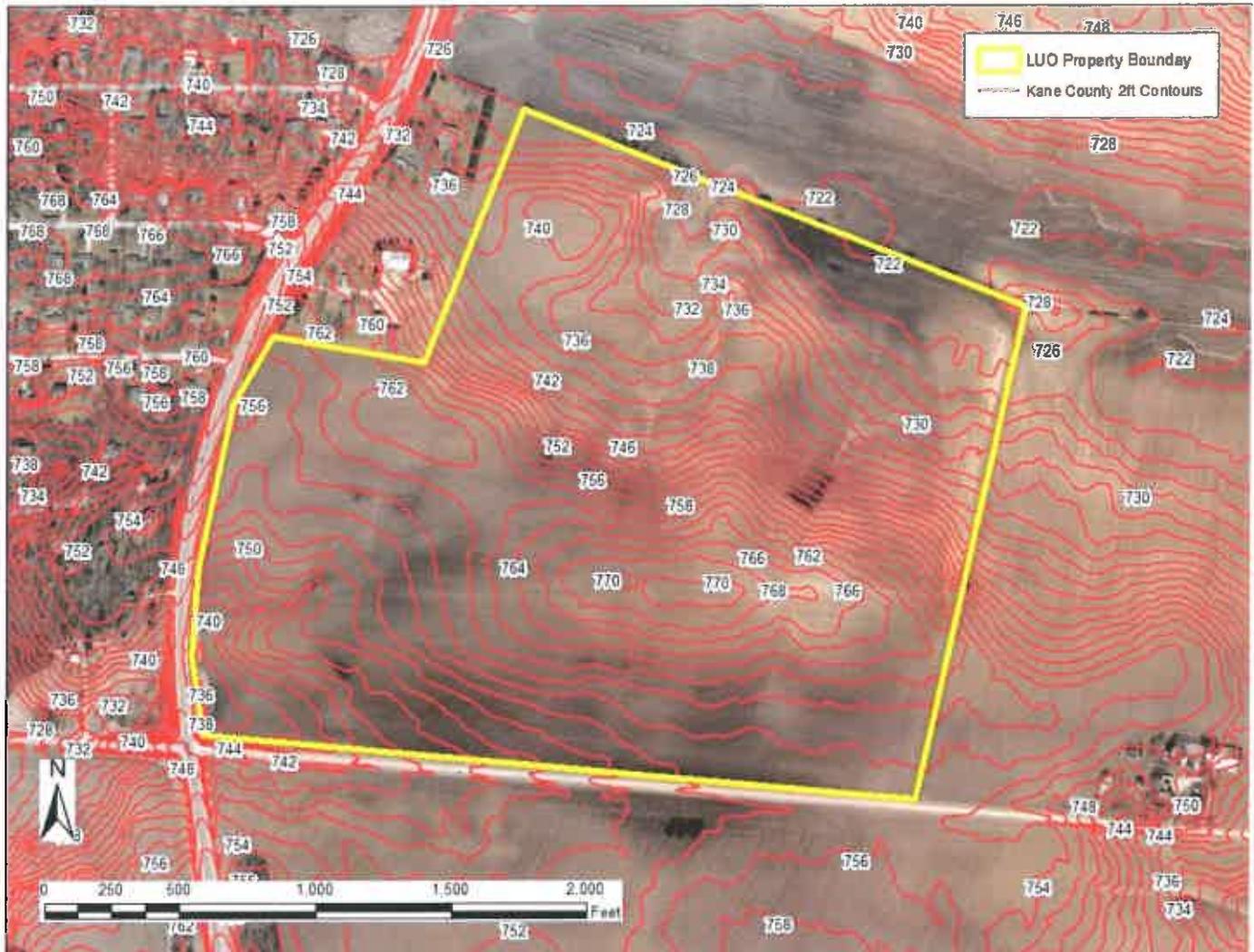


Figure 7: Municipalities 2 Ft Contours

USGS Topographic maps and other topographic surveys give information on elevations, which are important to determine slopes, natural drainage directions, and watershed information. Elevations determine the area of impact of flooding. Slope information determines steepness and erosion potential of the site. Slope has the greatest impact in determining the erosion potential of a site during construction activities. Drainage directions determine where water leaves the property in question, possibly impacting surrounding natural resources.

It is important to consider drainage during any proposed construction onsite. Any areas where water leaves the site should be monitored for potential pollutants which could contaminate downstream waters.

The high point of this property is located in the center of the site at an elevation of approximately 770 feet above mean sea level. The property generally drains in all directions via overland. The lowest elevation on the property is approximately 722 feet above sea level.

TOPOGRAPHY AND DRAINAGE

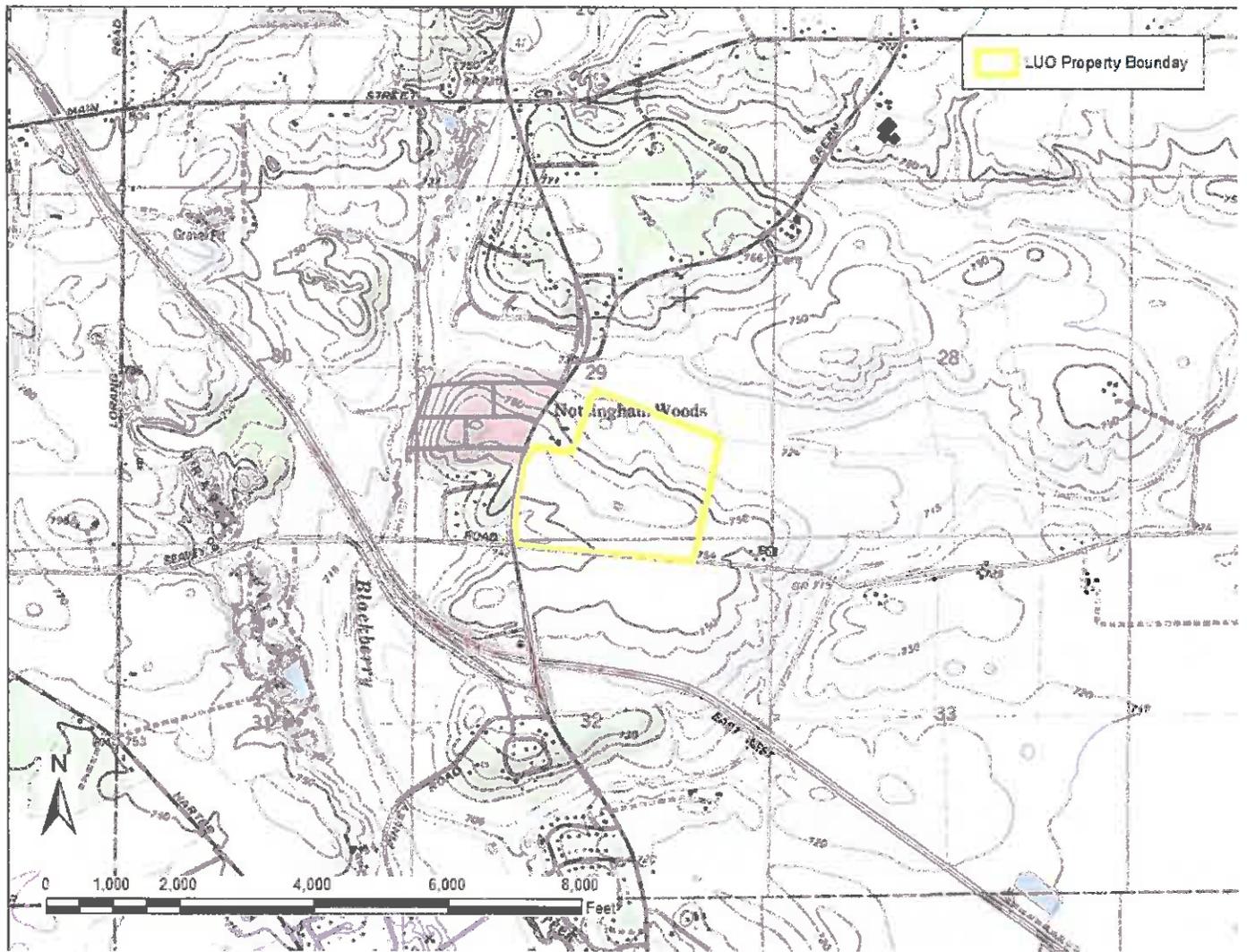


Figure 8: USGS Topographic Map

STORMWATER

Any proposed removal of vegetation, compaction of soil, and addition of impervious surfaces (rooftops, roadways, etc.) will greatly increase the amount of stormwater runoff generated on this site. The District recommends the use of onsite stormwater management strategies whenever possible. IEPA now recommends that stormwater pollution prevention plans include post-construction stormwater management which retains the greatest amount of post-development stormwater runoff practicable, given the site and project constraints. From the ILR10 permit for construction sites 1 acre or more, "Such practices include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open

vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices)."

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources/>

SOIL EROSION

Development on this site should include the use of a soil erosion and sedimentation control plan. Due to the soil type and slope of the site, the District believes that the potential for soil erosion during and after any proposed construction could be **large**. Furthermore, the erosion and resulting sedimentation may become a primary nonpoint source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

Erosion and sedimentation control measures include: 1) staging the construction to minimize the amount of disturbed areas present at the same time, 2) maintaining or planting vegetative groundcover, and 3) keeping runoff velocities low.

Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois.

SOILS INFORMATION

IMPORTANCE OF SOILS INFORMATION

Soils information is taken from the Soil Survey of Kane County, Illinois, United States Department of Agriculture, Natural Resource Conservation Service. This information is important to all parties involved in determining the suitability of the proposed land use change.

SOIL MAP UNITS

The soil survey map of this area (Figure 1) indicates soil map units. Each soil map unit has limitations for a variety of land uses such as septic systems, and buildings site development, including dwellings with and without basements. All of the soils contain **very limiting** conditions for building site development. **See Soils Interpretations section and attached Soil Tables.**

The Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of Kane County, Illinois. The soils were mapped at a scale of 1:12,000. The enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of the mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

LIST OF SOIL MAP UNITS

| SOIL MAP UNIT | PERCENT OF PARCEL | ACRES |
|--------------------------------|-------------------|---------------|
| 152A—Drummer | 16% | 19.55 |
| 198A—Elburn | 7% | 8.41 |
| 348B—Wingate | 33% | 40.92 |
| 348C2—Wingate | 3% | 3.22 |
| 512A—Danabrook | 2% | 2.97 |
| 512B—Danabrook | <1% | 0.17 |
| 512C2—Danabrook | 5% | 6.25 |
| 656C2—Octagon | 13% | 16.92 |
| 656D2—Octagon | 21% | 26.52 |
| Table 1: Soil Map Units | Total | 124.93 |

All percentages and acreages are approximate.

We suggest that a geotechnical engineer conduct an on site investigation. This should determine, specifically, what soils type is present at a particular location, along with its associated limitations or potential for a particular use. It will also assist in determining which types of engineering procedures are necessary to account for the limitations of the soil on the site.

HYDRIC SOILS

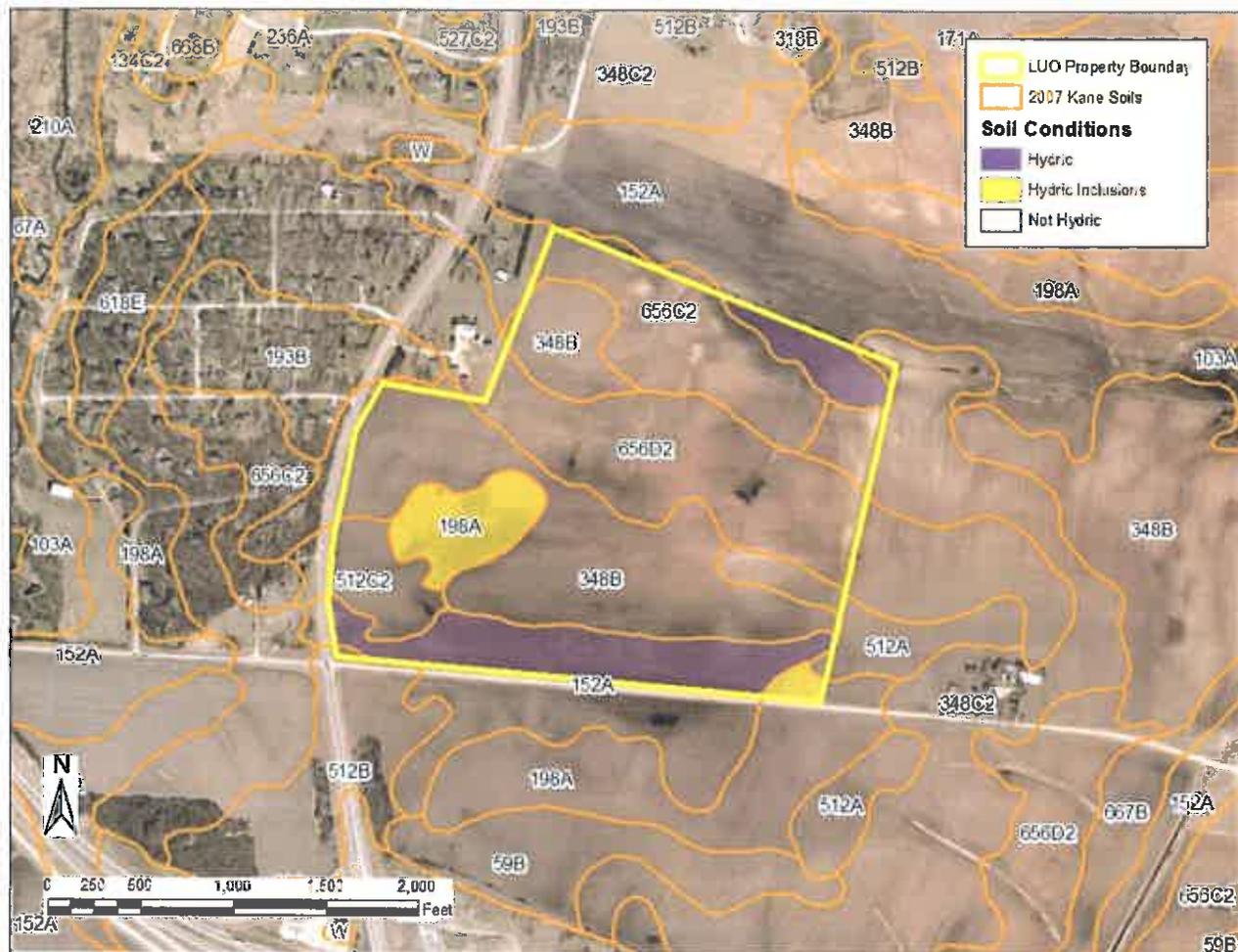


Figure 10: Hydric Soils

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County SSURGO soil layer certified in 2007. Hydric soils are shaded purple and soils with hydric inclusions are shaded yellow.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric inclusions are small areas, or inclusions, of nonhydric soils in the higher positions of the landform or map units dominantly made of nonhydric soils with inclusions of hydric soils in the low positions on the landform.

Hydric soils provide limitations for building site development due to their potential for ponding and poor drainage capacity. This often results in the need for improved drainage onsite prior to any proposed development. Any change to the natural drainage onsite has the potential to create flooding issues on and adjacent to the site. Hydric soils are often organic (peat or muck) and not suitable construction material. Hydric soils also may indicate wetlands onsite.

There are hydric soils and hydric inclusions on this site. A comprehensive soil assessment should be completed prior to any earth disturbing activities on this site.

LESA- PRIME FARMLAND

NOTE: The Kane County LESA System was revised and updated in 2004. Scores are reflected through a 33 point system used for the soils or Land Evaluation (LE) portion of the LESA Score.

Through the use of Kane County's Land Evaluation and Site Assessment System (LESA), a numerical value was determined for this site. The LESA System is designed to determine the quality of land for agricultural uses and to assess sites or land areas for their long term agricultural economic viability. In agricultural land evaluation, soils of a given area are rated ranging from the best to the worst suited for a stated agricultural use, i.e., cropland, forest land, or rangeland. A relative value is determined for each soil. The best soils are assigned a value of 33 and all others are assigned lower values. Therefore, the closer the relative value is to 33, the more valuable and more pro-

ductive the site's soils are for agricultural purposes.

The land evaluation represents thirty-three percent of the total LESA score. It is based on data from the National Cooperative Soil Survey. The site assessment portion of a LESA represents sixty-seven percent of the LESA score. It is based on factors such as zoning and land use compatibility

The land evaluation for this site is 28, which does represent the upper percent level of agricultural productivity.

Our opinion is based on information from the following sources:

- Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.
- County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.
- United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory, Photo Year 1983-1984, Digitized 1985-1986.
- Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.
- Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.
- U.S. Geological Survey, Illinois Digital Orthophoto Quadrangles, 2006 photos, Published: Champaign, Illinois State Geological Survey, 2006.
- Nonpoint Source Pollution– What's it All About?. Illinois Environmental Protection Agency. <http://www.epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/what-is-nonpoint-source-pollution/index>. 2015 Illinois EPA .
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County, IL SSURGO soil layer certified in 2007, and DuPage County, IL SSURGO soil layer certified in 2007 and accompanying interpretations.
- Dey, W.S., A.M. Davis, and B.B. Curry, 2007, Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS.
- An on-site investigation conducted by the SWCD Resource Assistant, Jennifer Shroder on November 29, 2018.

We respectfully submit this information in compliance with the Illinois Soil and Water Conservation Districts Act (ILCS 70, 405/1 et seq). The District Board reviews proposed developments. Jennifer Shroder, Resource Assistant, prepared this report.

cc: Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Map unit: 152A - Drummer silty clay loam, 0 to 2 percent slopes

Component: Drummer, drained (94%)

The Drummer, drained component makes up 94 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria.

Map unit: 198A - Elburn silt loam, 0 to 2 percent slopes

Component: Elburn (93%)

The Elburn component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 348B - Wingate silt loam, cool mesic, 2 to 5 percent slopes

Component: Wingate (97%)

The Wingate component makes up 97 percent of the map unit. Slopes are 2 to 5 percent. This component is on ground moraines on till plains. The parent material consists of loess over loamy till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: 348C2 - Wingate silt loam, 5 to 10 percent slopes, eroded

Component: Wingate (92%)

The Wingate component makes up 92 percent of the map unit. Slopes are 5 to 10 percent. This component is on ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map unit: 512A - Danabrook silt loam, 0 to 2 percent slopes

Component: Danabrook (90%)

The Danabrook component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 512B - Danabrook silt loam, 2 to 5 percent slopes

Component: Danabrook (90%)

The Danabrook component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on end moraines, ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 512C2 - Danabrook silt loam, 5 to 10 percent slopes, eroded

Component: Danabrook (92%)

The Danabrook component makes up 92 percent of the map unit. Slopes are 5 to 10 percent. This component is on ground moraines, end moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: 656C2 - Octagon silt loam, 4 to 6 percent slopes, eroded

Component: Octagon (92%)

The Octagon component makes up 92 percent of the map unit. Slopes are 4 to 6 percent. This component is on ground moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer, dense material, is 24 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: 656D2 - Octagon silt loam, 6 to 12 percent slopes, eroded

Component: Octagon (92%)

The Octagon component makes up 92 percent of the map unit. Slopes are 6 to 12 percent. This component is on end moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer, dense material, is 24 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Dwellings With Basements

Rating Options

Attribute Name: Dwellings With Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|--|------------------|---|
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 196A | Elburn silt loam, 0 to 2 percent slopes | Very limited | Elburn 93% Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell Thorp, drained 2% Ponding Depth to saturated zone Shrink-swell |
| 348B | Wingate silt loam, cool mesic, 2 to 5 percent slopes | Very limited | Wingate 97% Depth to saturated zone Shrink-swell Eipaso, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Depth to saturated zone Shrink-swell |
| 512A | Danabrook silt loam, 0 to 2 percent slopes | Somewhat limited | Danabrook 90% Depth to saturated zone Shrink-swell |
| 512B | Danabrook silt loam, 2 to 5 percent slopes | Somewhat limited | Danabrook 90% Depth to saturated zone Shrink-swell |
| 512C2 | Danabrook silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Danabrook 92% Depth to saturated zone Shrink-swell |
| 656C2 | Octagon silt loam, 4 to 6 percent slopes, eroded | Somewhat limited | Octagon 92% Depth to saturated zone |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Somewhat limited | Octagon 92% Depth to saturated zone Slope |

Dwellings Without Basements

Rating Options

Attribute Name: Dwellings Without Basements

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|--|------------------|---|
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Pectone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 348B | Wingate silt loam, cool mesic, 2 to 5 percent slopes | Somewhat limited | Wingate 97% Depth to saturated zone Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Shrink-swell |
| 512A | Danabrook silt loam, 0 to 2 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 512B | Danabrook silt loam, 2 to 5 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 512C2 | Danabrook silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Danabrook 92% Shrink-swell |
| 656C2 | Octagon silt loam, 4 to 6 percent slopes, eroded | Somewhat limited | Octagon 92% Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Somewhat limited | Octagon 92% Slope Shrink-swell |

Small Commercial Buildings

Rating Options

Attribute Name: Small Commercial Buildings

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear expansibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|--|------------------|---|
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 348B | Wingate silt loam, cool mesic, 2 to 5 percent slopes | Somewhat limited | Wingate 97% Depth to saturated zone Shrink-swell Slope |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Slope Shrink-swell |
| 512A | Danabrook silt loam, 0 to 2 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 512B | Danabrook silt loam, 2 to 5 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 512C2 | Danabrook silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Danabrook 92% Slope Shrink-swell |
| 656C2 | Octagon silt loam, 4 to 6 percent slopes, eroded | Somewhat limited | Octagon 92% Slope Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Very limited | Octagon 92% Slope Shrink-swell Elpaso 4% Ponding Depth to saturated zone Shrink-swell Herbert 4% Depth to saturated zone Shrink-swell |

CONTACTS

Federal Agencies

U. S. Army Corps of Engineers

Regulatory Branch
231 S LaSalle Street, Suite 1500
Chicago, Illinois 60604
(312)846-5330

<http://www.usace.army.mil>

U.S.D.A. Natural Resources Conservation Service

2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3

<http://www.il.nrcs.usda.gov/>

U.S. Fish & Wildlife Service

Chicago Illinois Field Office
230 South Dearborn Suite 2938
Chicago, IL 60604
(847)298-3250

<http://www.fws.gov/>

U.S. Environmental Protection Agency Region 5

77 West Jackson Boulevard
Chicago, Illinois 60604
(312)353-2000 or (800)621-8431

[http://www.epa.gov/region5/
r5hotline@epa.gov](http://www.epa.gov/region5/r5hotline@epa.gov)

State Agencies

Illinois Department of Natural Resources

1 Natural Resources Way
Springfield, Illinois 62702-1271
(217)782-6302

<http://dnr.state.il.us/>

Illinois Environmental Protection Agency

1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-3397

<http://www.epa.state.il.us/>

Illinois Department of Transportation

2300 South Dirksen Parkway
Schaumburg, Illinois 62764-0001
(217)782-7820/(800)452-4368

<http://www.idot.illinois.gov/>

Illinois Natural History Survey

1816 South Oak Street MC652
Champaign, Illinois 61820
(217)333-6880

<http://www.inhs.uiuc.edu/>

County Offices

Kane County

Government Center
719 South Batavia Ave.
Geneva, IL 60134
(630)232-3400

<http://www.countyofkane.org/>

Development Department

(630)232-3492

Department of Environmental Management

(630)208-5118

Forest Preserve District

1996 South Kirk Road, Suite 320
Geneva, IL 60134
(630)232-5980
forestpreserve.countyofkane.org

Health Department

1240 North Highland Avenue
Aurora, IL 60506
(630)208-3801

Land Use Opinion Report Recommendation Criteria

Single Signature LUO's

LUO's may be released to the petitioner with a single board signature if the following criteria are met-

- Area involved is 5 acres or less and
- Percentage of hydric soils is less than 30% or less, or,
- Soils with hydric inclusions are present at 70% or less, or
- Both Hydric and hydric inclusions present at 50% or less in combination

The board member reviewing a single signature LUO has the option of requiring an additional Board Member signature.

General LUO Recommendation Criteria

For all LUO's the following table should be used to provide a basis for determination of approval comment. If both soil types are present then combination should not exceed highest percentage for Soils with Hydric Inclusions.

| Soils | May Be | May Not Be | Is Not Suited |
|-------------------|--------|------------|---------------|
| Hydric | 0-30% | 30-70% | 70-100% |
| Hydric Inclusions | | 30-70% | 70-100% |

Additional negative factors that may downgrade a recommendation are as follows:

| | |
|---|---------|
| Identified wetlands onsite | Is Not |
| Previously unidentified wetlands onsite | May Not |
| Any wetland adjacent* | May Not |
| Other Critical features | May Not |

*Any disturbance to the site that would have an observable impact on a wetland would be considered *adjacent*.

Note: Other critical features include such issues as floodplain, historic resources, cultural resources, endangered or threatened species, or the presences of springs or seeps. LESA of 26 or greater should be listed as a Concern on LUO reports, and LESA scores will only be performed on sites in Kane County.

Adopted 8 December, 1999
 Revised February, 2000
 Revised March, 2004

**KANE-DUPAGE
SOIL AND WATER CONSERVATION DISTRICT**

**LAND USE OPINION
18-107B**



December 3, 2018

**Prepared for:
Village of Sugar Grove**

**Petitioner:
Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563**

Petitioner: Crown Community Development, 1751 A West Diehl Rd, Naperville, IL 60563

Contact Person: Daniel J. Olsem, 630-851-5490

Unit of Government Responsible for Permits: Village of Sugar Grove

Acreage: 41.41

Property Address/PIN#: Southwest corner of Seavey Road and Illinois Route 47

Existing Land Use: Agriculture

Surrounding Land Use: Agriculture

Proposed Land Use: Residential/Commercial

Natural Resource Concerns

Land Cover in the Early 1800's: This site is located in an area previously identified as prairie. (See page 2 for more information.)

Kane County Green Infrastructure Plan: This site is located in an area indicated as Environmental Resource Area (with buffer). (See page 3.)

Wetlands: The National Wetland Inventory map does not identify wetlands on this site. However, the ADID wetland map identifies a wetland area adjacent to this site. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of any wetlands. (See page 4 & 5 for more wetland information.)

Floodplain: There are floodplain areas identified on this site. (See page 6.)



Streams: A stream has been identified adjacent to this site. (See page 7.)

Regulations: Please note that additional permits are required for any development impacting wetlands, streams or floodplain areas. Please see page 8 for regulation information.

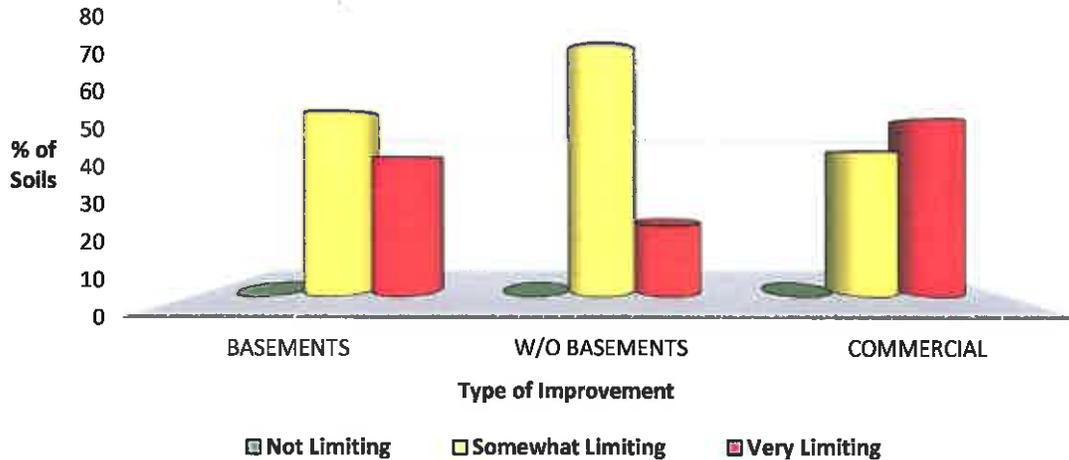
Aquifer Sensitivity: This site is classified as having a moderately high to moderately low potential for aquifer contamination. (See page 9.)

Topography and Drainage: Please refer to page 10 for information regarding site topography and drainage.

Stormwater: See page 12 for information regarding stormwater management.

Soil Erosion: Any development on this site should include a soil erosion and sediment control plan. (See page 12)

Building Limitations: Soils at this site may contain limitations for dwellings with basements, dwellings without basements, and small commercial buildings. See page 14 and attached Soils Tables located on the final pages this report. All information is from the Soil Survey of Kane County, Illinois.



Hydric Soils: There are hydric soils and soils with hydric inclusions identified on this site. (See page 15.)



LESA-Prime Farmland: Sites with a score of 26-33 or greater on the Land Evaluation (LE) portion of the LESA score are considered to have high value farmland soils. This site has a score of 29 placing it within the definition of high value soils/prime farmland. (See Page 16 for more information.)

LAND USE OPINION

Land Use Opinion: The most current natural resource data indicates the following concerns for this site: **Wetlands, Floodplain, Soil Limitations, LESA – Prime Farmland, Soil Erosion and Sediment Control, and Stormwater Management.** Based on the information in this report, it is the opinion of the Kane-DuPage Soil and Water Conservation District Board that this site **may not be suited** for land use change **unless** the previously mentioned concerns are addressed.

SITE INSPECTION

A site inspection was conducted by Resource Assistant, Jennifer Shroder on November 29, 2018. The following photos were taken during this inspection and reflect the site conditions at that time.



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PURPOSE AND INTENT

This report presents natural resource information to officials of the local governing body and other decision makers. Decisions concerning variations, amendments or relief of local zoning ordinance may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands because of these decisions may reference this report. This report is a requirement under the Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report intends to present the most current natural resource information available in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other. This information comes from standardized data, on-site investigations and other information furnished by the petitioner.

Please read the entire report to coordinate and interrelate all natural resource factors considered. This report, when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county.

The conclusion of this report in no way indicates the impossibility of a certain land use. However, it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Please direct technical questions about data supplied in this report to:

Kane-DuPage
Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175
Phone: (630) 584-7960

LAND COVER IN THE EARLY 1800'S

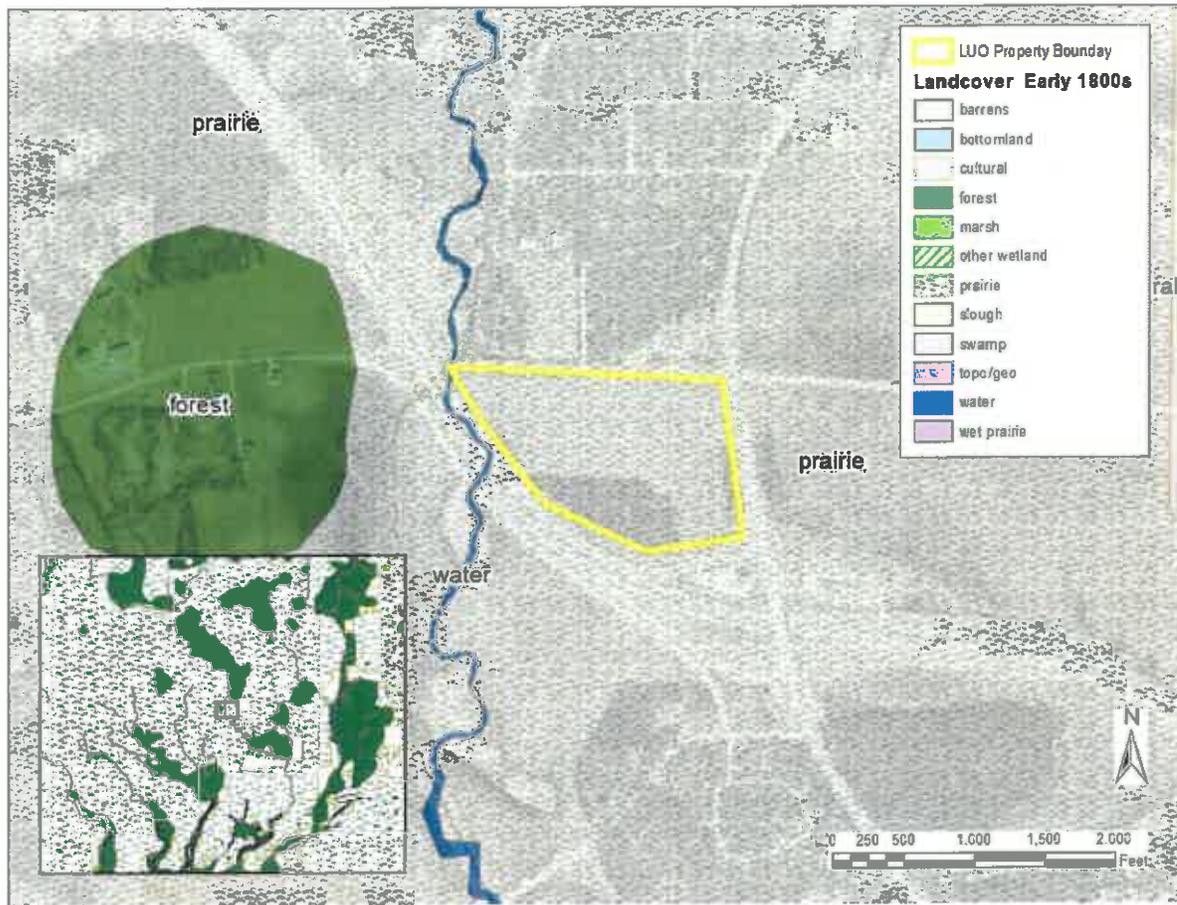


Figure 1: Land Cover in the Early 1800's

Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.

These surveys represent one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. They predate our county land ownership maps and atlases. These plat maps and field notebooks contain a wealth of information about what the landscape was like before the flood of settlers came into the state.

The vast majority of the landscape of Illinois in the early 1800's consisted of two different natural resource areas. These two areas were prairie and forest. Prairie and woodland ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities

- improve soil health and reduce soil loss
- improve air and water quality

Other designations include, cultural (or agricultural area), marsh, wet prairie, wetland, barrens and water. Please note that these designations are based on surveys taken in the early 1800's, and may not represent exact site conditions.

This site is located in an area surveyed as prairie on the land cover in the early 1800's map. The District recommends preserving as much as of the natural character of the site as possible during this land use change. It is also recommended that native plants be utilized for landscaping whenever possible. Removal of invasive species is also encouraged.

GREEN INFRASTRUCTURE

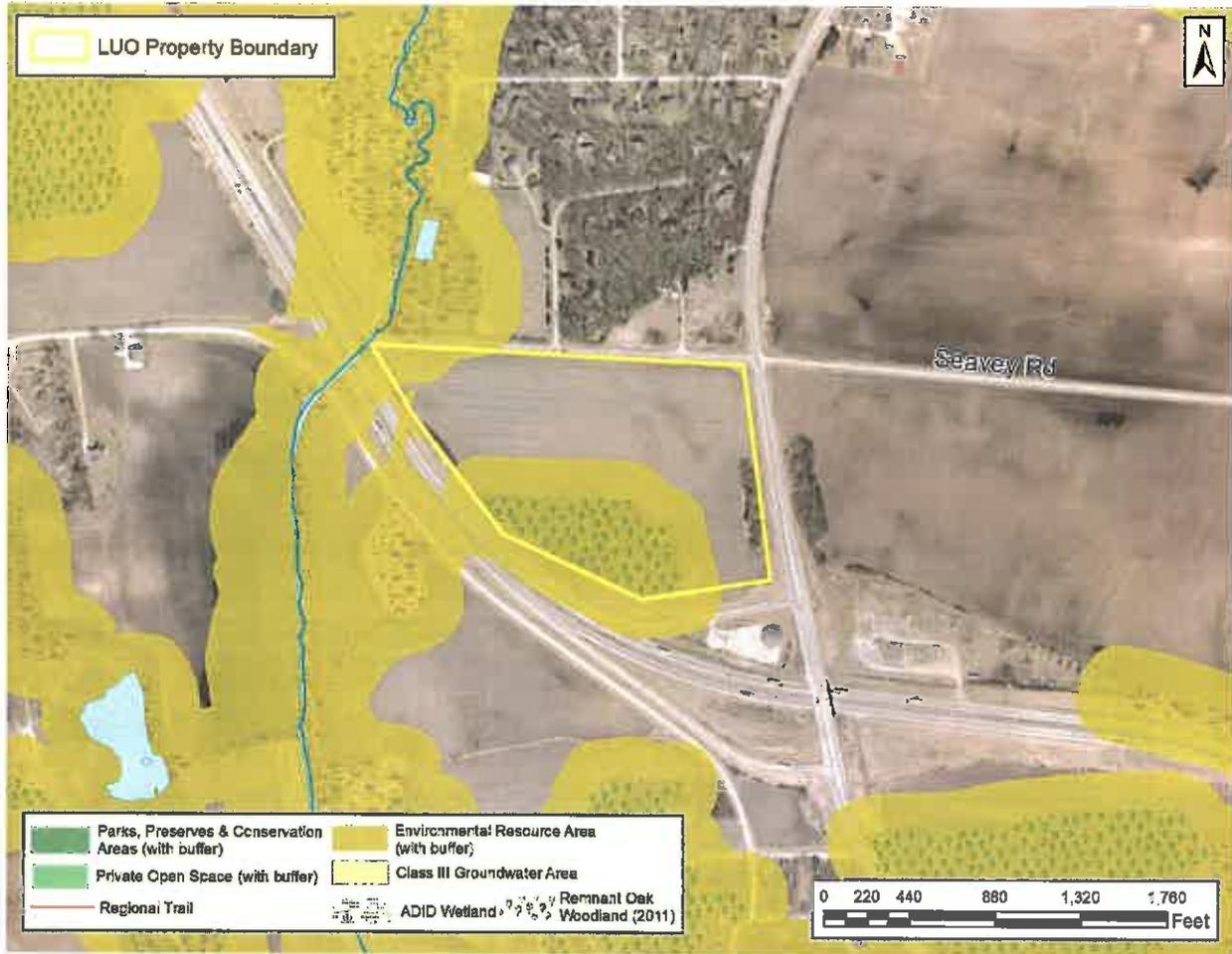


Figure 2: Kane County Green Infrastructure Plan

County of Kane. “Kane County 2040 Green Infrastructure Plan”. Adopted December 10, 2013.

From the Kane County Green Infrastructure Plan, “Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County 2040 Green Infrastructure Plan includes analysis of existing natural resources in the County and recommendations for green infrastructure priorities and approaches. The ultimate goal of the Kane County 2040 Green infrastructure Plan is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood and site levels.”

The benefits of green infrastructure include:

- Preservation of habitat and biodiversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority areas as designated on the Kane County 2040 Green Infrastructure Plan: Remnant Oak Woodlands, Environmental Resource Area (with buffer).

NWI WETLANDS

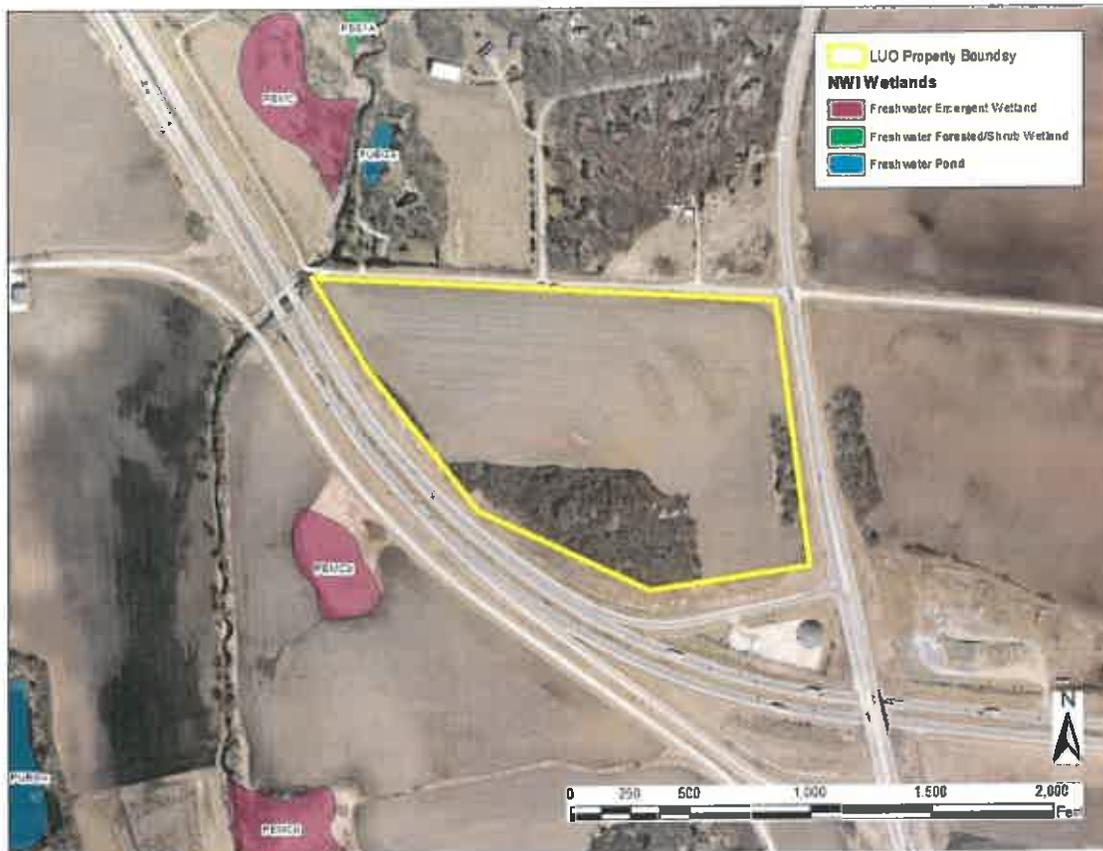


Figure 3: National Wetland Inventory Map

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Photo Year 1983-1984, Digitized 1985-1986.

Wetlands are some of the most productive and diverse ecological systems on earth. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Some other common wetlands located in this part of Illinois are fens and wet meadows.

Wetlands function in many ways to benefit mankind. Some of their many functions and benefits include:

- Controlling flooding by offering a slow release of excess water downstream or through the soil.

- Cleansing water by filtering out sediment and pollutants.
- Functioning as rechargers of our valuable groundwater.
- Providing essential breeding, rearing, and feeding grounds for many species of wildlife.

A review of the National Wetland Inventory Map indicates that wetlands do not appear to exist on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of these wetlands. Please see page 8 for wetland regulation information.

ADID WETLANDS

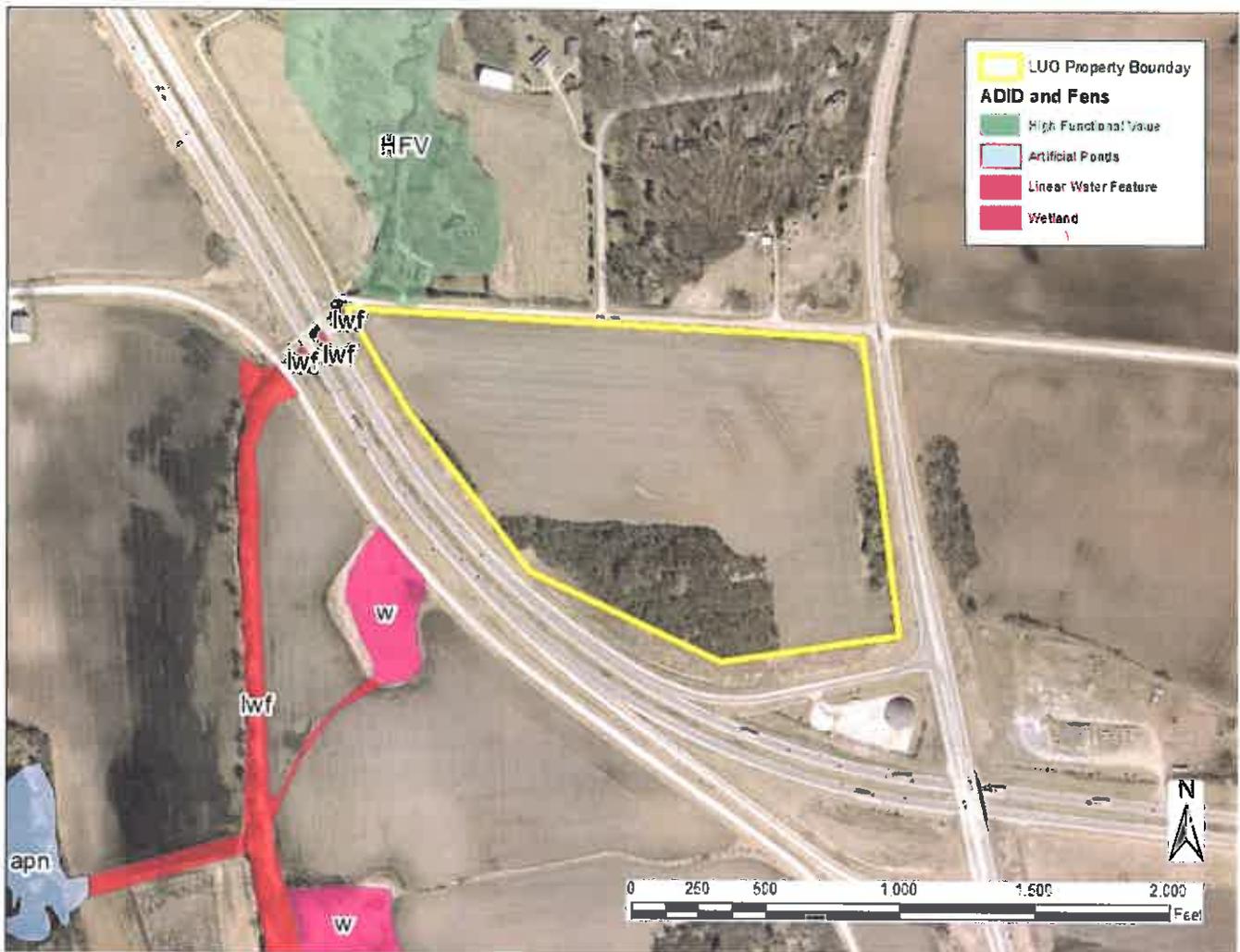


Figure 4: ADID Wetlands

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Released in August of 2004, the Kane County Advanced Identification of Aquatic Resources (or ADID) study is a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in the county. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This infor-

mation can be used by federal, state, and local governments to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration, acquisition, or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the full Kane County ADID study at : <http://dewprojects.countyofkane.org/adid/index.htm>

An ADID wetland was identified adjacent to this site. This wetland has been designated as having a high functional value.

FLOODPLAIN

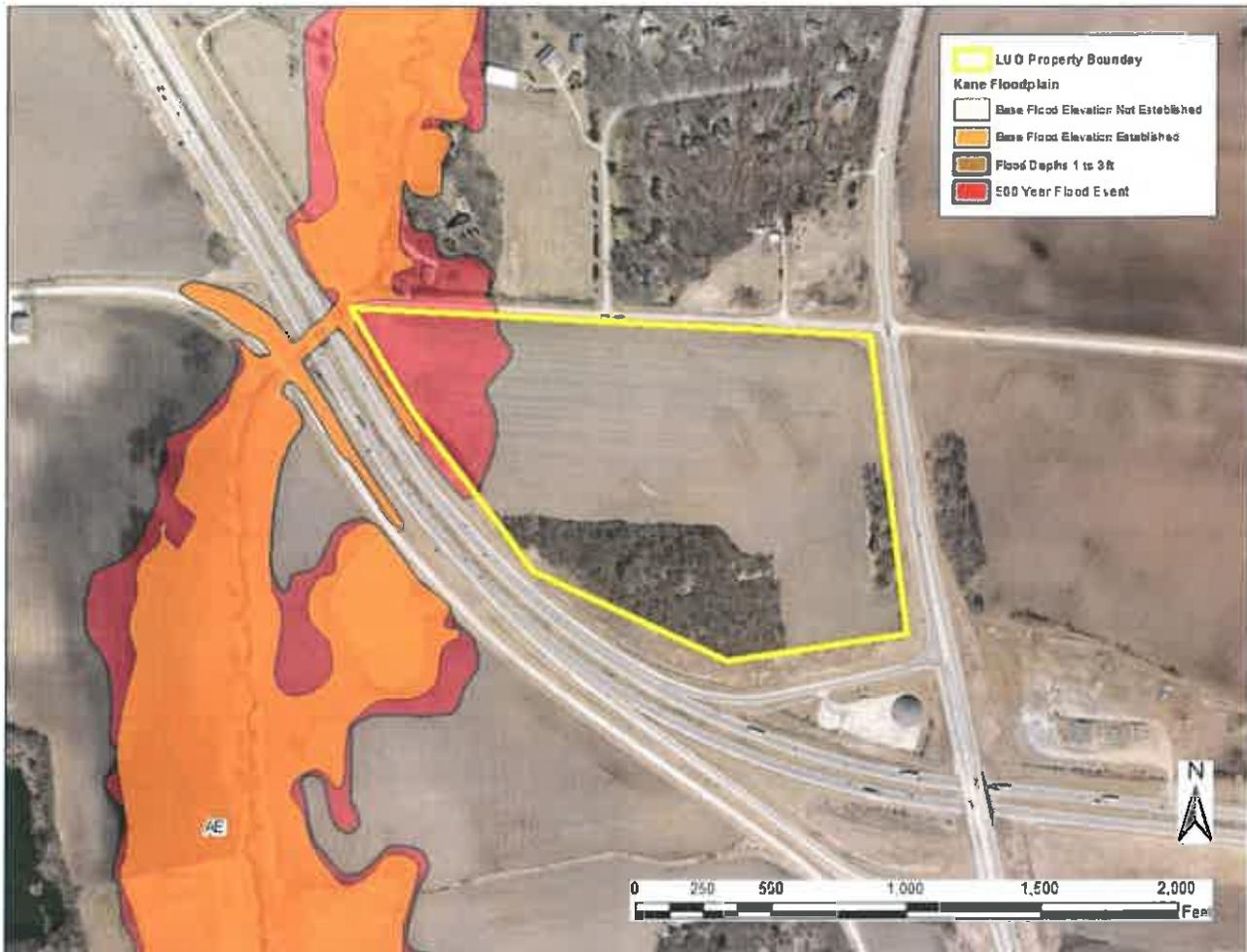


Figure 5: Floodplain Map

Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.

From FEMA's Floodplain Natural Resources and Functions Chapter 8, "Undeveloped floodplain land provides many natural resources and functions of considerable economic, social and environmental value. Nevertheless, these and other benefits are often overlooked when local land-use decisions are made. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment."

There are so many benefits of the floodplain that not all can be listed here, but the following is a general list of benefits and functions:

- natural flood storage and erosion control
- water quality maintenance
- groundwater recharge
- nutrient filtration
- biological productivity/wildlife habitat
- recreational opportunities/aesthetic value

According to the Flood Insurance Rate Map, approximately 1 % of this site is within the boundaries of a 100-year floodplain. This development may impede the beneficial functions of the floodplain. Please see 8 for information regarding floodplain regulations.

STREAMS AND WATERSHED MANAGEMENT

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA– Nonpoint Source Pollution).

The Illinois Environmental Protection Agency provides the following in regards to nonpoint source pollution, “Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of or sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification.”

Local watershed management planning is an important effort that involves citizens of a watershed in the protection of their local water resources. Water quality is a reflection of its watershed.

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage

- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

There are many subwatershed plans that have already been developed in Kane County. Please follow the link to the Kane County 2040 Green Infrastructure Plan. See page 108 for a list of local watershed plans.

<http://countyofkane.org/FDER/Pages/development/planning.aspx>

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a “dead zone” located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois’s Plan for reducing nutrient loss here:

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy/index>

REGULATORY INFORMATION

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat As well as recreational resources. Unregulated use of waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

REGULATORY AGENCIES:

Wetland/U.S. Waters: U.S. Army Corps of Engineers, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312) 353-6400.

<http://www.lrc.usace.army.mil/>

Wetland/Isolated: Kane County Water Resources Division, 719 Batavia Avenue, Geneva, IL 60134. (630)232-3400.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/water.aspx>

Floodplains: Illinois Department of Natural Resources\Office of Water Resources, 2050 W. Stearns Road, Bartlett, IL 60103. (847)608-3100.

<https://www.dnr.illinois.gov/WaterResources/Pages/Permit%20Programs.aspx>

Who Must Apply:

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, floodplain or floodway subject to State or Federal regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

NPDES General Construction Permit ILR10: Illinois Environmental Protection Agency, Division of Water Pollution Control, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794. (217)782-0610.

<http://www.epa.illinois.gov/topics/forms/water-permits/storm-water/construction/index>

Coordination: We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate/compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stage. This could reduce time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

AQUIFER SENSITIVITY



Figure 6: Aquifer Sensitivity Map

Dey, W.S., A.M. Davis, and B.B. Curry 2007, *Aquifer Sensitivity to Contamination, Kane County, Illinois*: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as “a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer.”

Aquifers function as a storage area for groundwater recharge, which makes them a reliable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. This site is classified as having a moderately low to moderately high potential for contamination.

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

| | | | |
|-----------|---|-----------|---|
| A1 | Aquifers are greater than 50ft thick and within 5ft of the surface | C1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| A2 | Aquifers are greater than 50ft thick and between 5 and 20ft below the surface | C2 | Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface |
| A3 | Aquifers are between 20 and 50ft thick and within 5ft of the surface | C3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface |
| A4 | Aquifers are between 20 and 50ft thick and between 5 and 20ft below the surface | D1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| B1 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface | D2 | Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface |
| B2 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface | D3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface |
| E1 | Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface | | |

TOPOGRAPHY AND DRAINAGE



Figure 7: Municipalities 2 Ft Contours

USGS Topographic maps and other topographic surveys give information on elevations, which are important to determine slopes, natural drainage directions, and watershed information. Elevations determine the area of impact of flooding. Slope information determines steepness and erosion potential of the site. Slope has the greatest impact in determining the erosion potential of a site during construction activities. Drainage directions determine where water leaves the property in question, possibly impacting surrounding natural resources.

It is important to consider drainage during any proposed construction onsite. Any areas where water leaves the site should be monitored for potential pollutants which could contaminate downstream waters.

The high point of this property is located in the center of the site at an elevation of approximately 764 feet above mean sea level. The property generally drains in all directions via overland. The lowest elevation on the property is approximately 714 feet above sea level.

TOPOGRAPHY AND DRAINAGE

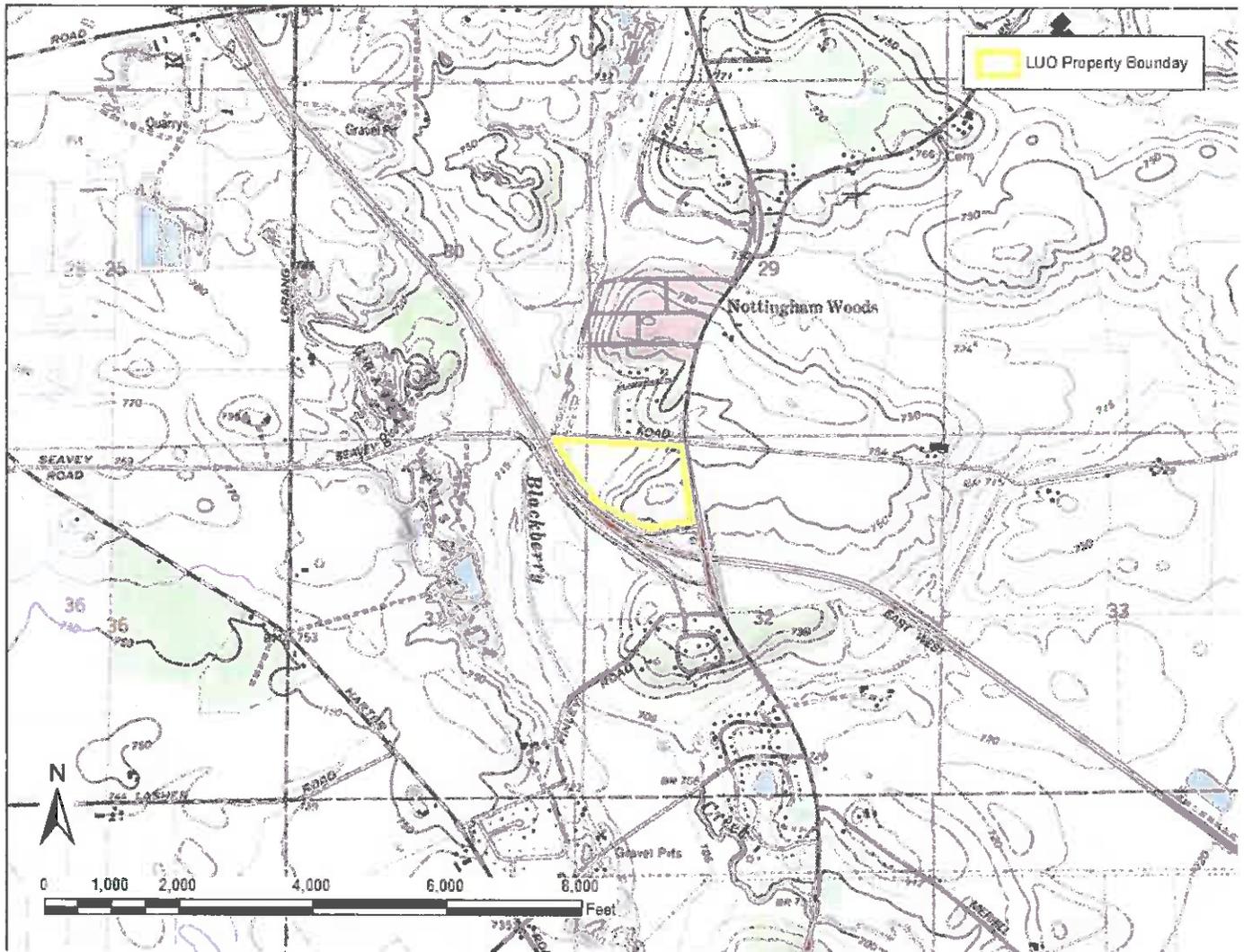


Figure 8: USGS Topographic Map

STORMWATER

Any proposed removal of vegetation, compaction of soil, and addition of impervious surfaces (rooftops, roadways, etc.) will greatly increase the amount of stormwater runoff generated on this site. The District recommends the use of onsite stormwater management strategies whenever possible. IEPA now recommends that stormwater pollution prevention plans include post-construction stormwater management which retains the greatest amount of post-development stormwater runoff practicable, given the site and project constraints. From the ILR10 permit for construction sites 1 acre or more, "Such practices include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open

vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices)."

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources/>

SOIL EROSION

Development on this site should include the use of a soil erosion and sedimentation control plan. Due to the soil type and slope of the site, the District believes that the potential for soil erosion during and after any proposed construction could be **large**. Furthermore, the erosion and resulting sedimentation may become a primary nonpoint source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

Erosion and sedimentation control measures include: 1) staging the construction to minimize the amount of disturbed areas present at the same time, 2) maintaining or planting vegetative groundcover, and 3) keeping runoff velocities low.

Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois.

SOILS INFORMATION

IMPORTANCE OF SOILS INFORMATION

Soils information is taken from the Soil Survey of Kane County, Illinois, United States Department of Agriculture, Natural Resource Conservation Service. This information is important to all parties involved in determining the suitability of the proposed land use change.

SOIL MAP UNITS

The soil survey map of this area (Figure 1) indicates soil map units. Each soil map unit has limitations for a variety of land uses such as septic systems, and buildings site development, including dwellings with and without basements. All of the soils contain **very limiting** conditions for building site development. See **Soils Interpretations** section and attached **Soil Tables**.

The Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of Kane County, Illinois. The soils were mapped at a scale of 1:12,000. The enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of the mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

LIST OF SOIL MAP UNITS

| SOIL MAP UNIT | PERCENT OF PARCEL | ACRES |
|--------------------------------|----------------------|--------------|
| 152A—Drummer | 20% | 8.16 |
| 198A—Elburn | 21% | 8.67 |
| 219A—Millbrook | 2% | 0.81 |
| 512B—Danabrook | 23% | 9.59 |
| 656D2—Octagon | 33% | 13.67 |
| 802B—Orthents | 1% | 0.51 |
| Table 1: Soil Map Units | | Total |
| | | 41.41 |

All percentages and acreages are approximate.

We suggest that a geotechnical engineer conduct an on site investigation. This should determine, specifically, what soils type is present at a particular location, along with its associated limitations or potential for a particular use. It will also assist in determining which types of engineering procedures are necessary to account for the limitations of the soil on the site.

LESA- PRIME FARMLAND

NOTE: The Kane County LESA System was revised and updated in 2004. Scores are reflected through a 33 point system used for the soils or Land Evaluation (LE) portion of the LESA Score.

Through the use of Kane County's Land Evaluation and Site Assessment System (LESA), a numerical value was determined for this site. The LESA System is designed to determine the quality of land for agricultural uses and to assess sites or land areas for their long term agricultural economic viability. In agricultural land evaluation, soils of a given area are rated ranging from the best to the worst suited for a stated agricultural use, i.e., cropland, forest land, or rangeland. A relative value is determined for each soil. The best soils are assigned a value of 33 and all others are assigned lower values. Therefore, the closer the relative value is to 33, the more valuable and more pro-

ductive the site's soils are for agricultural purposes.

The land evaluation represents thirty-three percent of the total LESA score. It is based on data from the National Cooperative Soil Survey. The site assessment portion of a LESA represents sixty-seven percent of the LESA score. It is based on factors such as zoning and land use compatibility

The land evaluation for this site is 29, which does represent the upper percent level of agricultural productivity.

Our opinion is based on information from the following sources:

- Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.
- County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.
- United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory, Photo Year 1983-1984, Digitized 1985-1986.
- Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.
- Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.
- U.S. Geological Survey, Illinois Digital Orthophoto Quadrangles, 2006 photos, Published: Champaign, Illinois State Geological Survey, 2006.
- Nonpoint Source Pollution– What's it All About?. Illinois Environmental Protection Agency. <http://www.epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/what-is-nonpoint-source-pollution/index>. 2015 Illinois EPA .
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County, IL SSURGO soil layer certified in 2007, and DuPage County, IL SSURGO soil layer certified in 2007 and accompanying interpretations.
- Dey, W.S., A.M. Davis, and B.B. Curry, 2007, Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS.
- An on-site investigation conducted by the SWCD Resource Assistant, Jennifer Shroder on November 29, 2018.

We respectfully submit this information in compliance with the Illinois Soil and Water Conservation Districts Act (ILCS 70, 405/1 et seq). The District Board reviews proposed developments. Jennifer Shroder, Resource Assistant, prepared this report.

cc: Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Map unit: 152A - Drummer silty clay loam, 0 to 2 percent slopes

Component: Drummer, drained (94%)

The Drummer, drained component makes up 94 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria.

Map unit: 198A - Elburn silt loam, 0 to 2 percent slopes

Component: Elburn (93%)

The Elburn component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 219A - Millbrook silt loam, 0 to 2 percent slopes

Component: Millbrook (90%)

The Millbrook component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: 512B - Danabrook silt loam, 2 to 5 percent slopes

Component: Danabrook (90%)

The Danabrook component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on end moraines, ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 656D2 - Octagon silt loam, 6 to 12 percent slopes, eroded

Component: Octagon (92%)

The Octagon component makes up 92 percent of the map unit. Slopes are 6 to 12 percent. This component is on end moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer, dense material, is 24 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: 802B - Orthents, loamy, undulating

Component: Orthents, loamy (92%)

The Orthents, loamy component makes up 92 percent of the map unit. Slopes are 1 to 6 percent. This component is on leveled land. The parent material consists of earthy fill. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during February, March, April. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Dwellings With Basements

Rating Options

Attribute Name: Dwellings With Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Very limited | Elburn 93% Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell Thorp, drained 2% Ponding Depth to saturated zone Shrink-swell |
| 219A | Millbrook silt loam, 0 to 2 percent slopes | Very limited | Millbrook 90% Depth to saturated zone |
| 512B | Danabrook silt loam, 2 to 5 percent slopes | Somewhat limited | Danabrook 90% Depth to saturated zone Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Somewhat limited | Octagon 92% Depth to saturated zone Slope |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell Depth to saturated zone |

Dwellings Without Basements

Rating Options

Attribute Name: Dwellings Without Basements

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 219A | Millbrook silt loam, 0 to 2 percent slopes | Very limited | Millbrook 90% Depth to saturated zone |
| 512B | Danabrook silt loam, 2 to 5 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Somewhat limited | Octagon 92% Slope Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell |

Small Commercial Buildings

Rating Options

Attribute Name: Small Commercial Buildings

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 219A | Millbrook silt loam, 0 to 2 percent slopes | Very limited | Millbrook 90% Depth to saturated zone |
| 512B | Danabrook silt loam, 2 to 5 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Very limited | Octagon 92% Slope Shrink-swell Elpaso 4% Ponding Depth to saturated zone Shrink-swell Herbert 4% Depth to saturated zone Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell |

CONTACTS

Federal Agencies

U. S. Army Corps of Engineers

Regulatory Branch
231 S LaSalle Street, Suite 1500
Chicago, Illinois 60604
(312)846-5330

<http://www.usace.army.mil>

U.S.D.A. Natural Resources Conservation Service

2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3

<http://www.il.nrcs.usda.gov/>

U.S. Fish & Wildlife Service

Chicago Illinois Field Office
230 South Dearborn Suite 2938
Chicago, IL 60604
(847)298-3250

<http://www.fws.gov/>

U.S. Environmental Protection Agency

Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
(312)353-2000 or (800)621-8431

[http://www.epa.gov/region5/
r5hotline@epa.gov](http://www.epa.gov/region5/r5hotline@epa.gov)

State Agencies

Illinois Department of Natural Resources

1 Natural Resources Way
Springfield, Illinois 62702-1271
(217)782-6302

<http://dnr.state.il.us/>

Illinois Environmental Protection Agency

1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-3397

<http://www.epa.state.il.us/>

Illinois Department of Transportation

2300 South Dirksen Parkway
Schaumburg, Illinois 62764-0001
(217)782-7820/(800)452-4368

<http://www.idot.illinois.gov/>

Illinois Natural History Survey

1816 South Oak Street MC652
Champaign, Illinois 61820
(217)333-6880

<http://www.inhs.uiuc.edu/>

County Offices

Kane County

Government Center
719 South Batavia Ave.
Geneva, IL 60134
(630)232-3400

<http://www.countyofkane.org/>

Development Department

(630)232-3492

Department of Environmental Management

(630)208-5118

Forest Preserve District

1996 South Kirk Road, Suite 320
Geneva, IL 60134
(630)232-5980

forestpreserve.countyofkane.org

Health Department

1240 North Highland Avenue
Aurora, IL 60506
(630)208-3801

Petitioner: Crown Community Development, 1751 A West Diehl Rd, Naperville, IL 60563

Contact Person: Daniel J. Olsem, 630-851-5490

Unit of Government Responsible for Permits: Village of Sugar Grove

Acreage: 153.20

Property Address/PIN#: Southeast corner of Seavey Rd & Illinois Route 47

Existing Land Use: Agriculture

Surrounding Land Use: Agriculture

Proposed Land Use: Residential/Commercial

Natural Resource Concerns

Land Cover in the Early 1800's: This site is located in an area previously identified as prairie and cultural. (See page 2 for more information.)

Kane County Green Infrastructure Plan: This site is located in an area indicated as Environmental Resource Area (with buffer), Wetland. (See page 3.)

Wetlands: The National Wetland Inventory map does not identify wetland areas on site. However, the ADID wetland map identifies a linear water feature (creek) on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of any wetlands. (See page 4 & 5 for more wetland information.)

Floodplain: There are floodplain areas identified on this site. (See page 7.)



Streams: A stream has been identified on this site. (See page 8.)

Regulations: Please note that additional permits are required for any development impacting wetlands, streams or floodplain areas. Please see page 9 for regulation information.

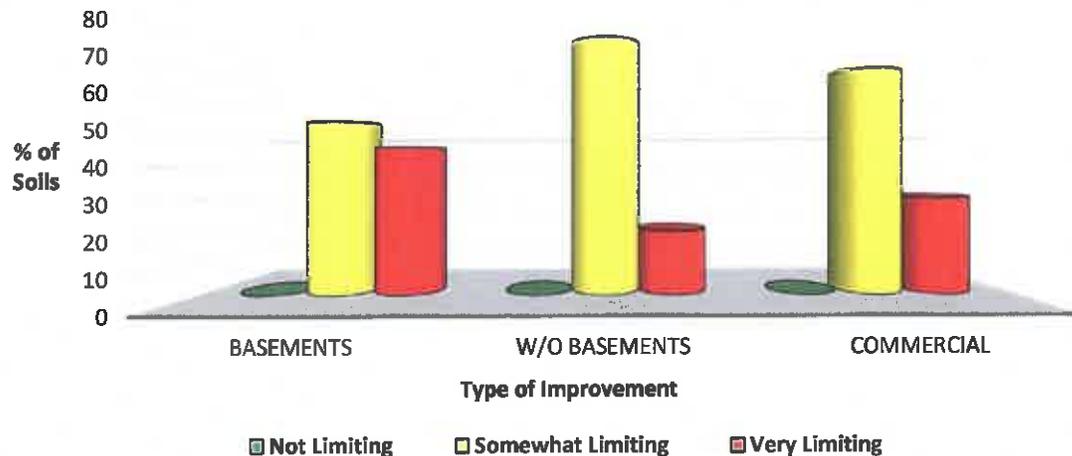
Aquifer Sensitivity: This site is classified as having a moderately low potential for aquifer contamination. (See page 10.)

Topography and Drainage: Please refer to page 11 for information regarding site topography and drainage.

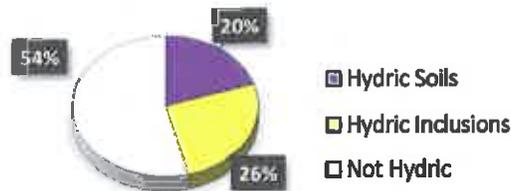
Stormwater: See page 13 for information regarding stormwater management.

Soil Erosion: Any development on this site should include a soil erosion and sediment control plan. (See page 13.)

Building Limitations: Soils at this site may contain limitations for dwellings with basements, dwellings without basements, and small commercial buildings. See page 15 and attached Soils Tables located on the final pages this report. All information is from the Soil Survey of Kane County, Illinois.



Hydric Soils: There are hydric soils and soils with hydric inclusions identified on this site. (See page 16.)



LESA-Prime Farmland: Sites with a score of 26-33 or greater on the Land Evaluation (LE) portion of the LESA score are considered to have high value farmland soils. This site has a score of 29 placing it within the definition of high value soils/prime farmland. (See Page 17 for more information.)

LAND USE OPINION

Land Use Opinion: The most current natural resource data indicates the following concerns for this site: **Stream On-site, Floodplain, Soil Limitations, LESA – Prime Farmland, Soil Erosion and Sediment Control, and Stormwater Management.** Based on the information in this report, it is the opinion of the Kane-DuPage Soil and Water Conservation District Board that this site **may not be suited** for land use change **unless** the previously mentioned concerns are addressed.

SITE INSPECTION

A site inspection was conducted by Resource Assistant, Jennifer Shroder on November 29, 2018. The following photos were taken during this inspection and reflect the site conditions at that time.



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PURPOSE AND INTENT

This report presents natural resource information to officials of the local governing body and other decision makers. Decisions concerning variations, amendments or relief of local zoning ordinance may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands because of these decisions may reference this report. This report is a requirement under the Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report intends to present the most current natural resource information available in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other. This information comes from standardized data, on-site investigations and other information furnished by the petitioner.

Please read the entire report to coordinate and interrelate all natural resource factors considered. This report, when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county.

The conclusion of this report in no way indicates the impossibility of a certain land use. However, it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Please direct technical questions about data supplied in this report to:

Kane-DuPage
Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175
Phone: (630) 584-7960

LAND COVER IN THE EARLY 1800'S

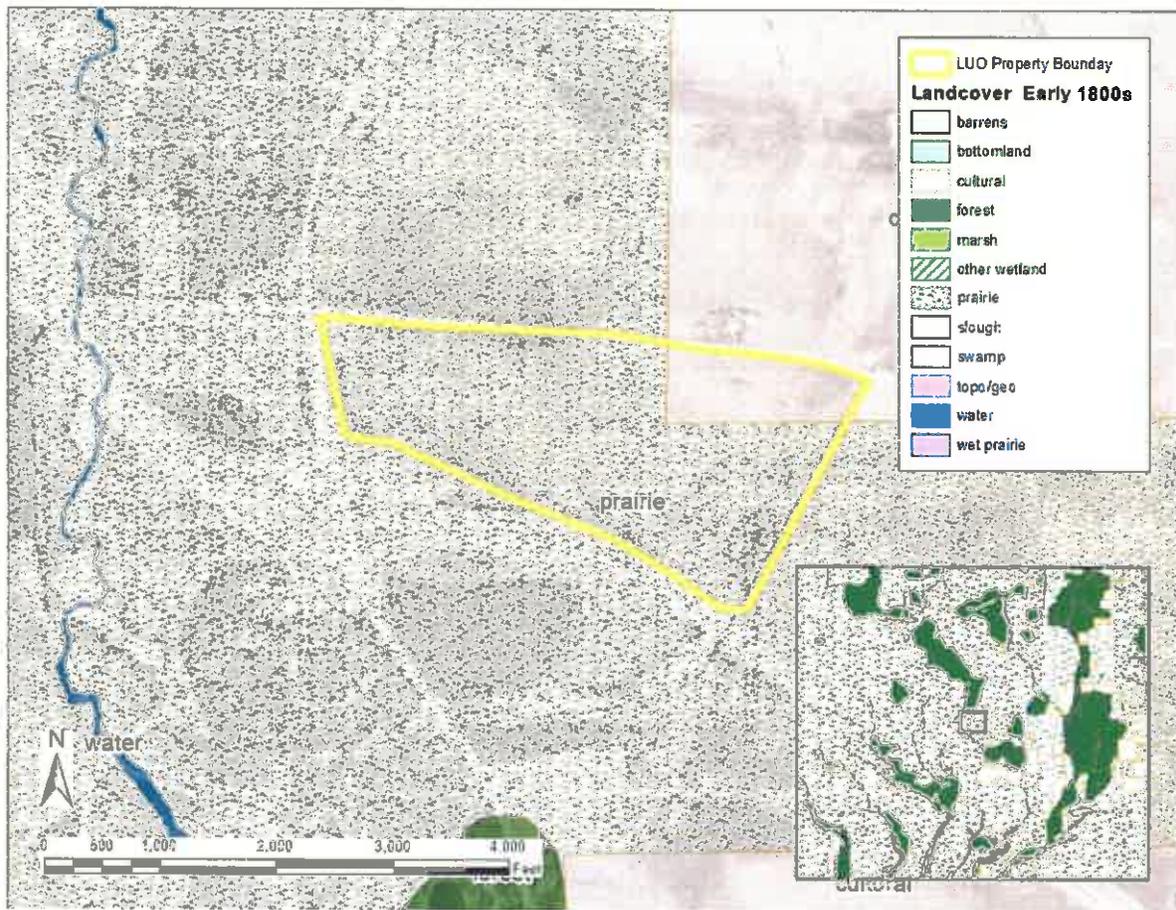


Figure 1: Land Cover in the Early 1800's

Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.

These surveys represent one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. They predate our county land ownership maps and atlases. These plat maps and field notebooks contain a wealth of information about what the landscape was like before the flood of settlers came into the state.

The vast majority of the landscape of Illinois in the early 1800's consisted of two different natural resource areas. These two areas were prairie and forest. Prairie and woodland ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities

- improve soil health and reduce soil loss
- improve air and water quality

Other designations include, cultural (or agricultural area), marsh, wet prairie, wetland, barrens and water. Please note that these designations are based on surveys taken in the early 1800's, and may not represent exact site conditions.

This site is located in an area surveyed as prairie and cultural on the land cover in the early 1800's map. The District recommends preserving as much as of the natural character of the site as possible during this land use change. It is also recommended that native plants be utilized for landscaping whenever possible. Removal of invasive species is also encouraged.

GREEN INFRASTRUCTURE

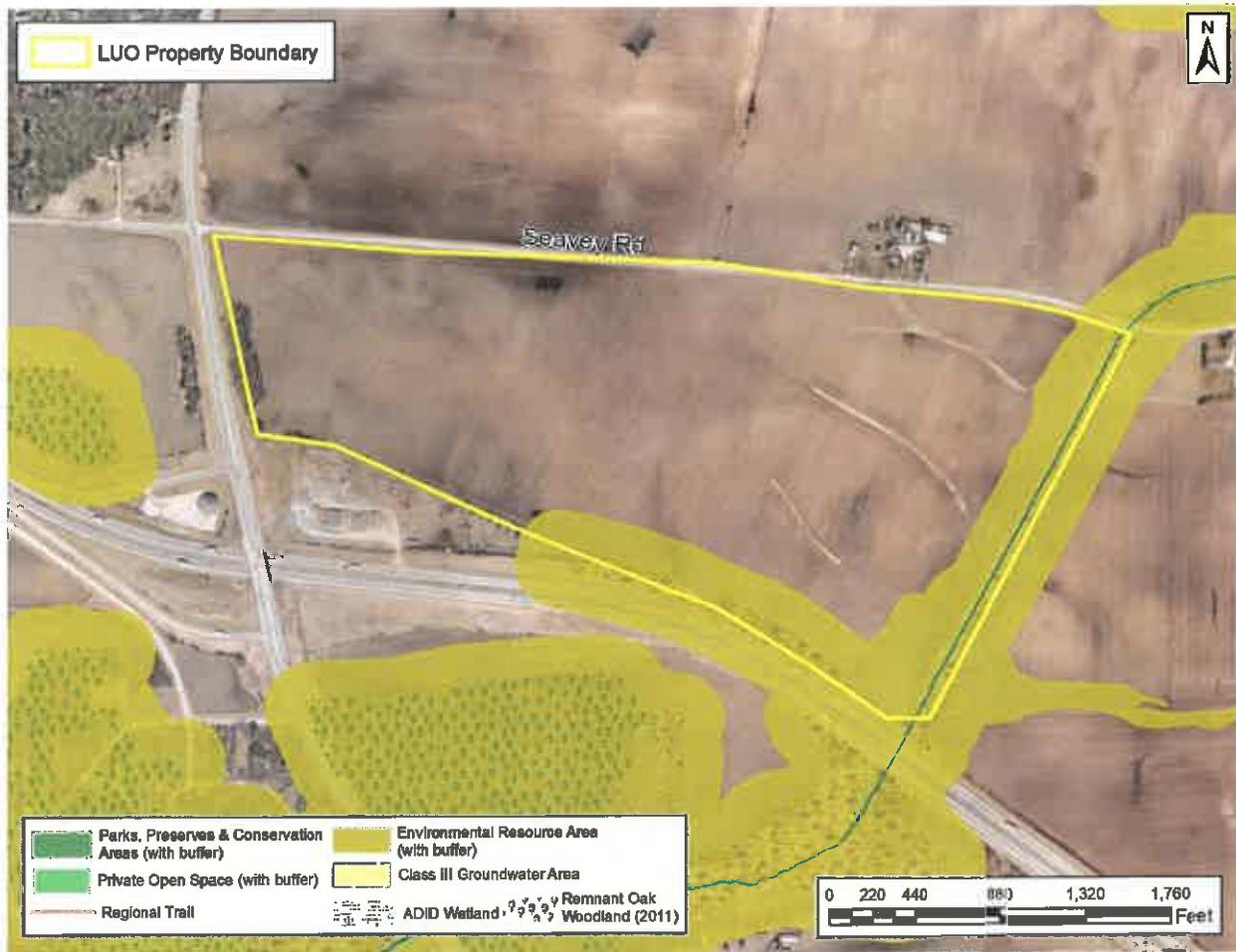


Figure 2: Kane County Green Infrastructure Plan

County of Kane. “Kane County 2040 Green Infrastructure Plan”. Adopted December 10, 2013.

From the Kane County Green Infrastructure Plan, “Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County 2040 Green Infrastructure Plan includes analysis of existing natural resources in the County and recommendations for green infrastructure priorities and approaches. The ultimate goal of the Kane County 2040 Green infrastructure Plan is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood and site levels.”

The benefits of green infrastructure include:

- Preservation of habitat and biodiversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority areas as designated on the Kane County 2040 Green Infrastructure Plan: Wetlands, Environmental Resource Area (with buffer).

NWI WETLANDS

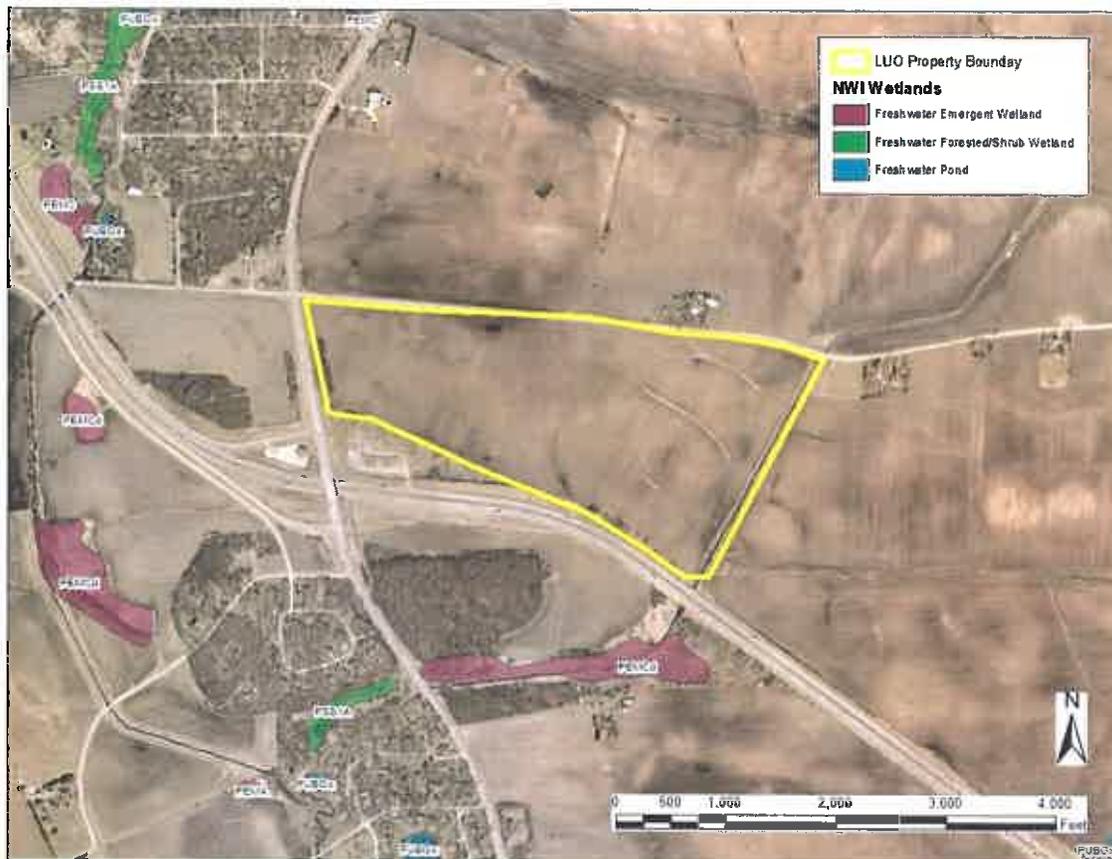


Figure 3: National Wetland Inventory Map

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Photo Year 1983-1984, Digitized 1985-1986.

Wetlands are some of the most productive and diverse ecological systems on earth. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Some other common wetlands located in this part of Illinois are fens and wet meadows.

Wetlands function in many ways to benefit mankind. Some of their many functions and benefits include:

- Controlling flooding by offering a slow release of excess water downstream or through the soil.

- Cleansing water by filtering out sediment and pollutants.
- Functioning as rechargers of our valuable groundwater.
- Providing essential breeding, rearing, and feeding grounds for many species of wildlife.

A review of the National Wetland Inventory Map indicates that wetlands do not appear to exist on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change. A wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of these wetlands. Please see page 8 for wetland regulation information.

ADID WETLANDS

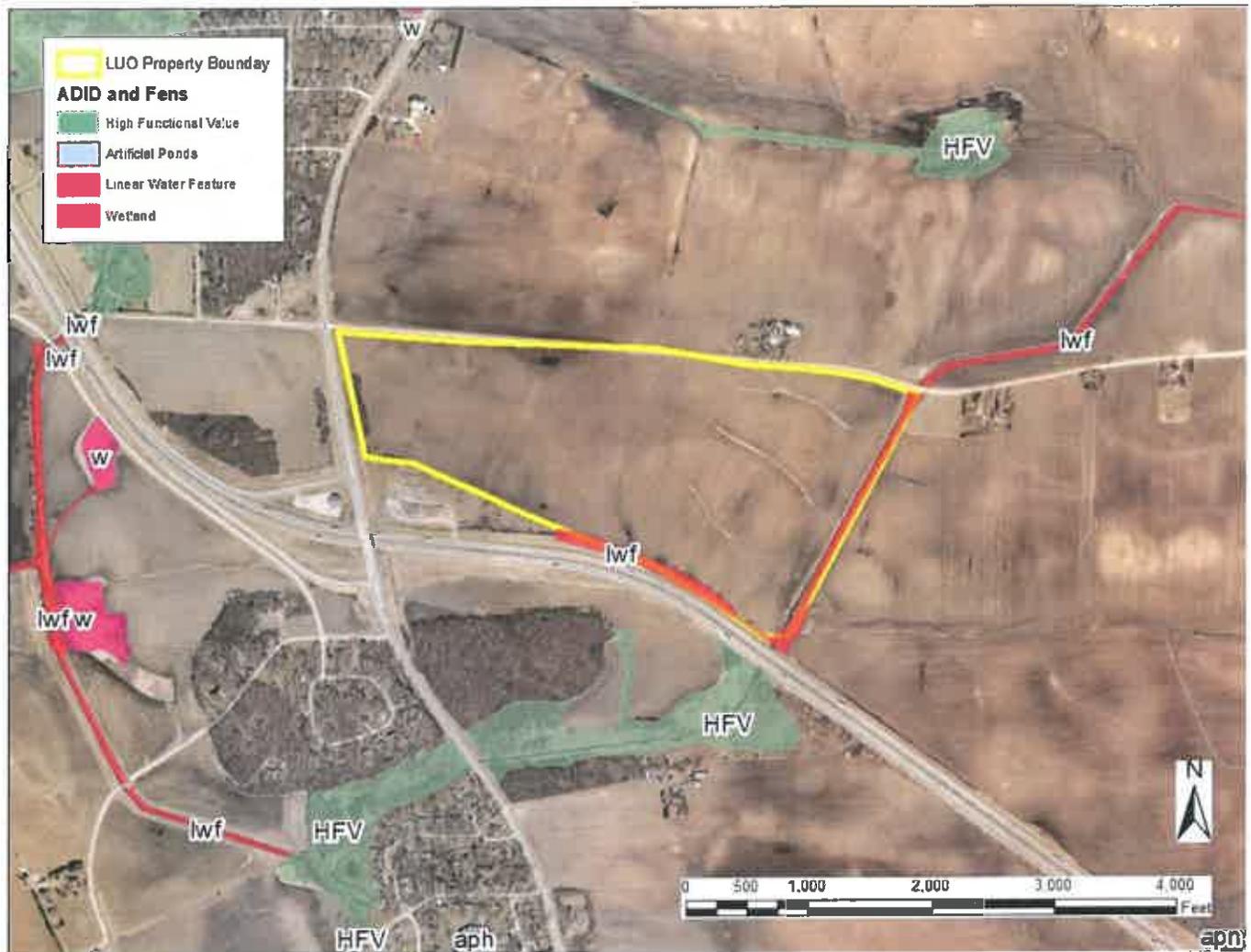


Figure 4: ADID Wetlands

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Released in August of 2004, the Kane County Advanced Identification of Aquatic Resources (or ADID) study is a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in the county. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This infor-

mation can be used by federal, state, and local governments to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration, acquisition, or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the full Kane County ADID study at : <http://dewprojects.countyofkane.org/adid/index.htm>

The ADID wetland map identifies a linear water feature (stream) on this site.

WETLANDS PHOTOS

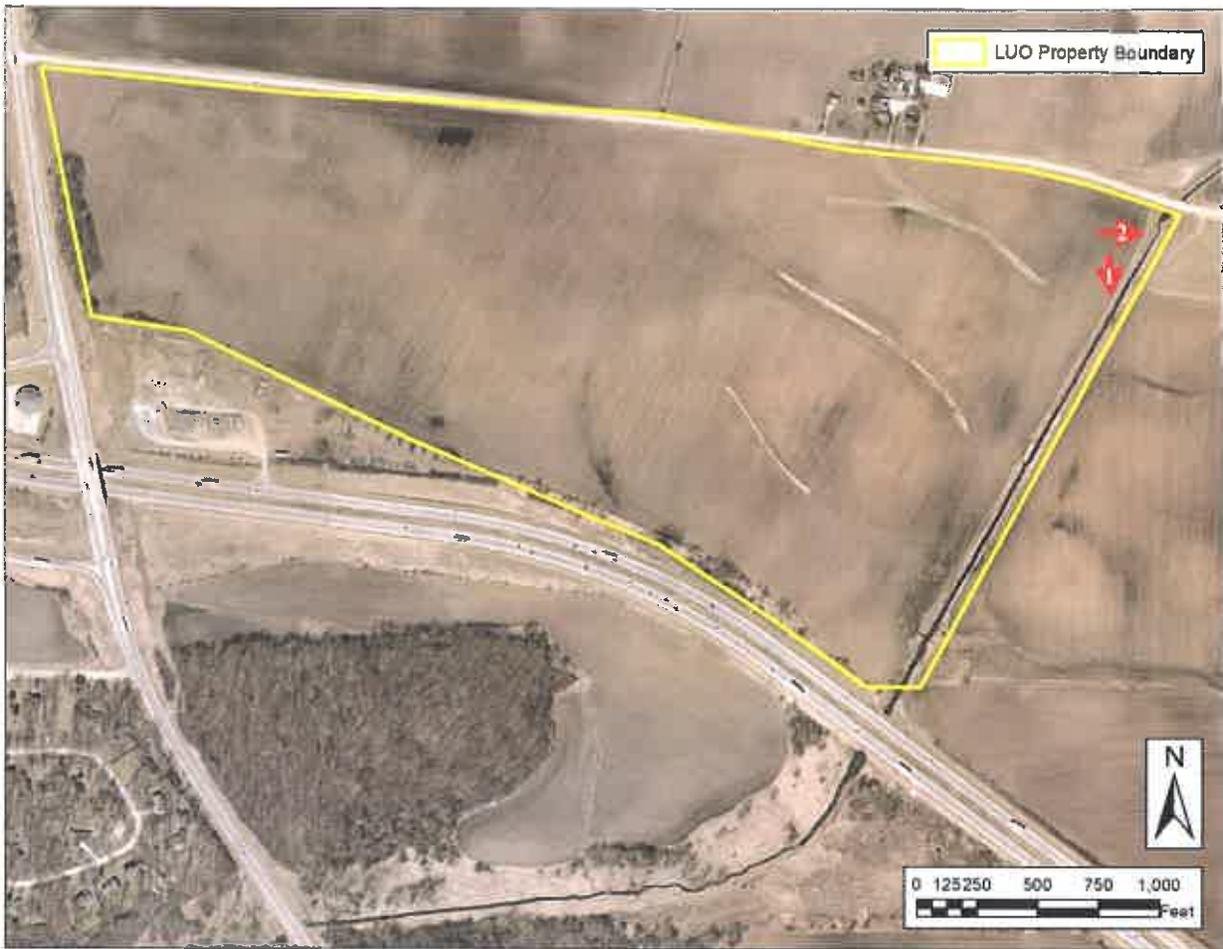


Figure 5: Wetlands photos



Point 1: Facing south



Point 2: Facing east

FLOODPLAIN

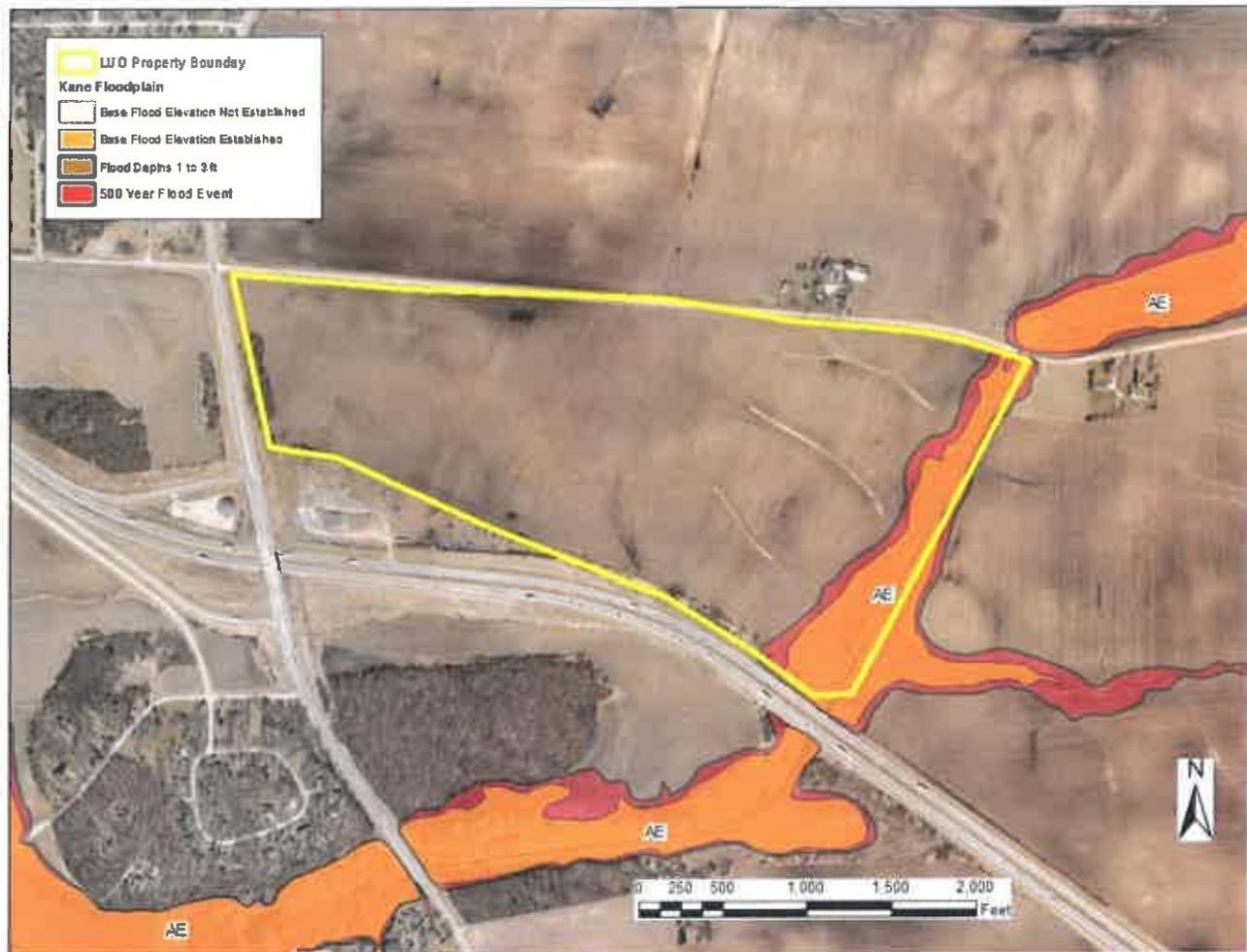


Figure 6: Floodplain Map

Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.

From FEMA's Floodplain Natural Resources and Functions Chapter 8, "Undeveloped floodplain land provides many natural resources and functions of considerable economic, social and environmental value. Nevertheless, these and other benefits are often overlooked when local land-use decisions are made. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment."

There are so many benefits of the floodplain that not all can be listed here, but the following is a general list of benefits and functions:

- natural flood storage and erosion control
- water quality maintenance
- groundwater recharge
- nutrient filtration
- biological productivity/wildlife habitat
- recreational opportunities/aesthetic value

According to the Flood Insurance Rate Map, approximately 9 % of this site is within the boundaries of a 100-year floodplain. This development may impede the beneficial functions of the floodplain. Please see 8 for information regarding floodplain regulations.

STREAMS AND WATERSHED MANAGEMENT

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA– Nonpoint Source Pollution).

The Illinois Environmental Protection Agency provides the following in regards to nonpoint source pollution, “Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of or sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification.”

Local watershed management planning is an important effort that involves citizens of a watershed in the protection of their local water resources. Water quality is a reflection of its watershed.

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage

- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

There are many subwatershed plans that have already been developed in Kane County. Please follow the link to the Kane County 2040 Green Infrastructure Plan. See page 108 for a list of local watershed plans.

<http://countyofkane.org/FDER/Pages/development/planning.aspx>

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a “dead zone” located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois’s Plan for reducing nutrient loss here:

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy/index>

REGULATORY INFORMATION

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat As well as recreational resources. Unregulated use of waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

REGULATORY AGENCIES:

Wetland/U.S. Waters: U.S. Army Corps of Engineers, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312) 353-6400.

<http://www.lrc.usace.army.mil/>

Wetland/Isolated: Kane County Water Resources Division, 719 Batavia Avenue, Geneva, IL 60134. (630)232-3400.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/water.aspx>

Floodplains: Illinois Department of Natural Resources\Office of Water Resources, 2050 W. Stearns Road, Bartlett, IL 60103. (847)608-3100.

<https://www.dnr.illinois.gov/WaterResources/Pages/Permit%20Programs.aspx>

Who Must Apply:

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, floodplain or floodway subject to State or Federal regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

NPDES General Construction Permit ILR10: Illinois Environmental Protection Agency, Division of Water Pollution Control, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794. (217)782-0610.

<http://www.epa.illinois.gov/topics/forms/water-permits/storm-water/construction/index>

Coordination: We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate/compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stage. This could reduce time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

AQUIFER SENSITIVITY



Figure 7: Aquifer Sensitivity Map

Dey, W.S., A.M. Davis, and B.B. Curry 2007, *Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS*

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as “a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer.”

Aquifers function as a storage area for groundwater recharge, which makes them a reliable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. This site is classified as having a moderately low potential for contamination.

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

| | | | |
|-----------|---|-----------|---|
| A1 | Aquifers are greater than 50ft thick and within 5ft of the surface | C1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| A2 | Aquifers are greater than 50ft thick and between 5 and 20ft below the surface | C2 | Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface |
| A3 | Aquifers are between 20 and 50ft thick and within 5ft of the surface | C3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface |
| A4 | Aquifers are between 20 and 50ft thick and between 5 and 20ft below the surface | D1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| B1 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface | D2 | Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface |
| B2 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface | D3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface |
| E1 | Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface | | |

TOPOGRAPHY AND DRAINAGE

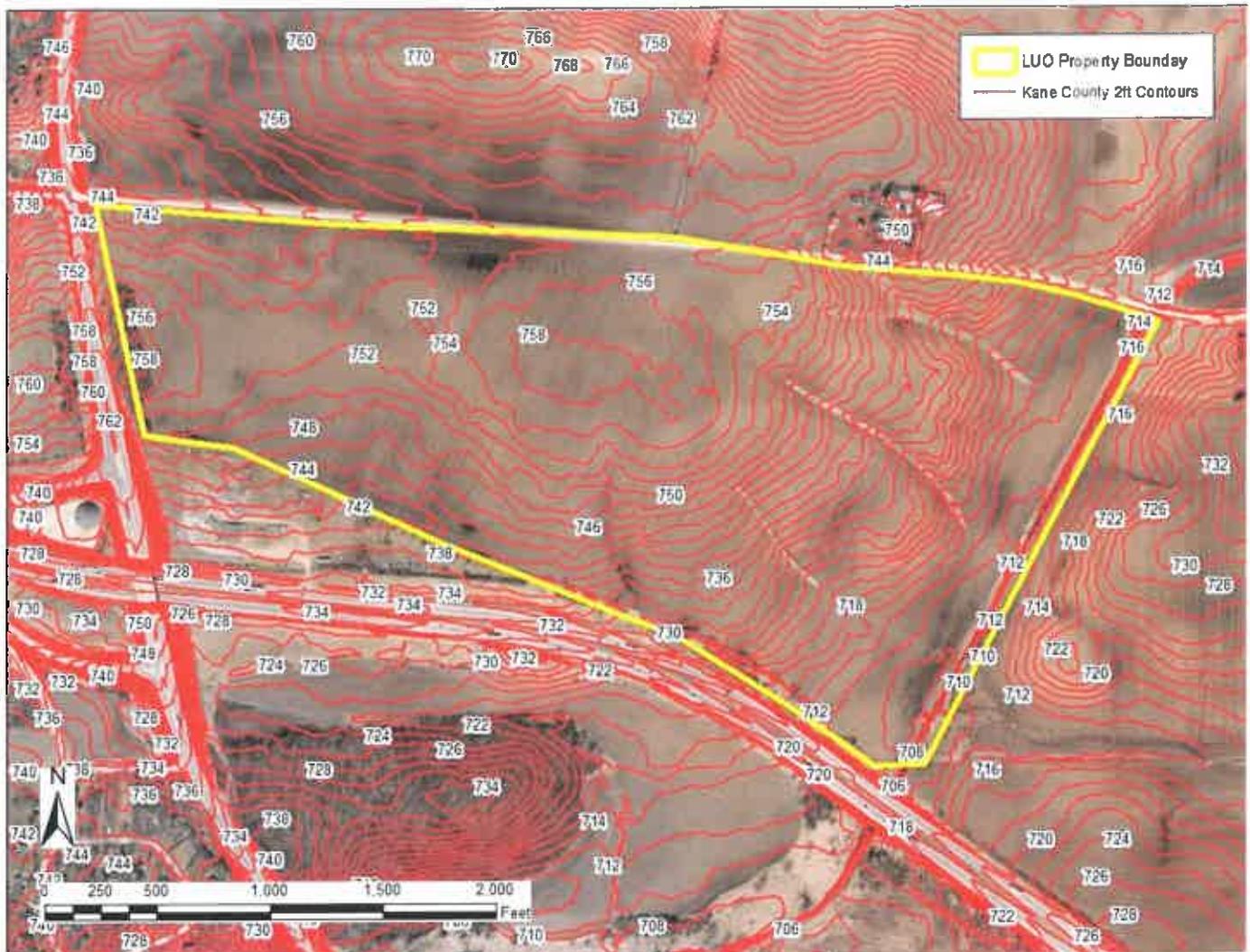


Figure 8: Municipalities 2 Ft Contours

USGS Topographic maps and other topographic surveys give information on elevations, which are important to determine slopes, natural drainage directions, and watershed information. Elevations determine the area of impact of flooding. Slope information determines steepness and erosion potential of the site. Slope has the greatest impact in determining the erosion potential of a site during construction activities. Drainage directions determine where water leaves the property in question, possibly impacting surrounding natural resources.

It is important to consider drainage during any proposed construction onsite. Any areas where water leaves the site should be monitored for potential pollutants which could contaminate downstream waters.

The high point of this property is located in the center of the site at an elevation of approximately 758 feet above mean sea level. The property generally drains in all directions. The lowest elevation on the property is approximately 708 feet above sea level.

TOPOGRAPHY AND DRAINAGE

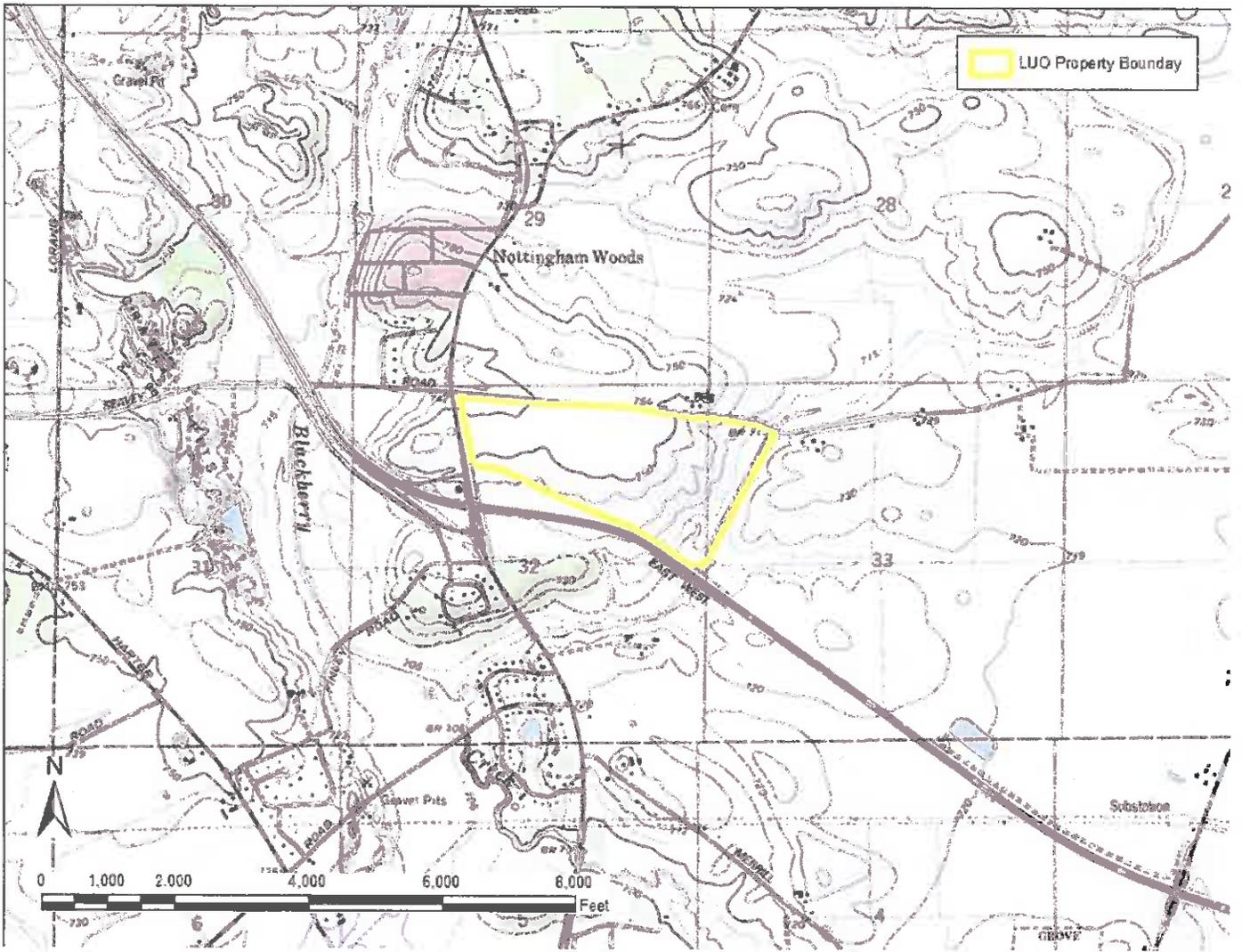


Figure 9: USGS Topographic Map

STORMWATER

Any proposed removal of vegetation, compaction of soil, and addition of impervious surfaces (rooftops, roadways, etc.) will greatly increase the amount of stormwater runoff generated on this site. The District recommends the use of onsite stormwater management strategies whenever possible. IEPA now recommends that stormwater pollution prevention plans include post-construction stormwater management which retains the greatest amount of post-development stormwater runoff practicable, given the site and project constraints. From the ILR10 permit for construction sites 1 acre or more, "Such practices include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open

vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices)."

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources/>

SOIL EROSION

Development on this site should include the use of a soil erosion and sedimentation control plan. Due to the soil type and slope of the site, the District believes that the potential for soil erosion during and after any proposed construction could be **large**. Furthermore, the erosion and resulting sedimentation may become a primary nonpoint source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

Erosion and sedimentation control measures include: 1) staging the construction to minimize the amount of disturbed areas present at the same time, 2) maintaining or planting vegetative groundcover, and 3) keeping runoff velocities low.

Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois.

SOILS INFORMATION

IMPORTANCE OF SOILS INFORMATION

Soils information is taken from the Soil Survey of Kane County, Illinois, United States Department of Agriculture, Natural Resource Conservation Service. This information is important to all parties involved in determining the suitability of the proposed land use change.

SOIL MAP UNITS

The soil survey map of this area (Figure 1) indicates soil map units. Each soil map unit has limitations for a variety of land uses such as septic systems, and buildings site development, including dwellings with and without basements. All of the soils contain **very limiting** conditions for building site development. **See Soils Interpretations section and attached Soil Tables.**

The Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of Kane County, Illinois. The soils were mapped at a scale of 1:12,000. The enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of the mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

LIST OF SOIL MAP UNITS

| SOIL MAP UNIT | PERCENT OF PARCEL | ACRES |
|--------------------------------|-------------------|---------------|
| 59B—Lisbon | 11% | 17.04 |
| 152A—Drummer | 20% | 31.10 |
| 198A—Elburn | 15% | 23.69 |
| 348C2—Wingate | 26% | 39.28 |
| 512A—Danabrook | 7% | 11.21 |
| 656D2—Octagon | 10% | 15.28 |
| 667B—Kaneville | 10% | 15.44 |
| 802B—Orthents | 1% | 0.16 |
| Table 1: Soil Map Units | Total | 153.20 |

All percentages and acreages are approximate.

We suggest that a geotechnical engineer conduct an on site investigation. This should determine, specifically, what soils type is present at a particular location, along with its associated limitations or potential for a particular use. It will also assist in determining which types of engineering procedures are necessary to account for the limitations of the soil on the site.

HYDRIC SOILS

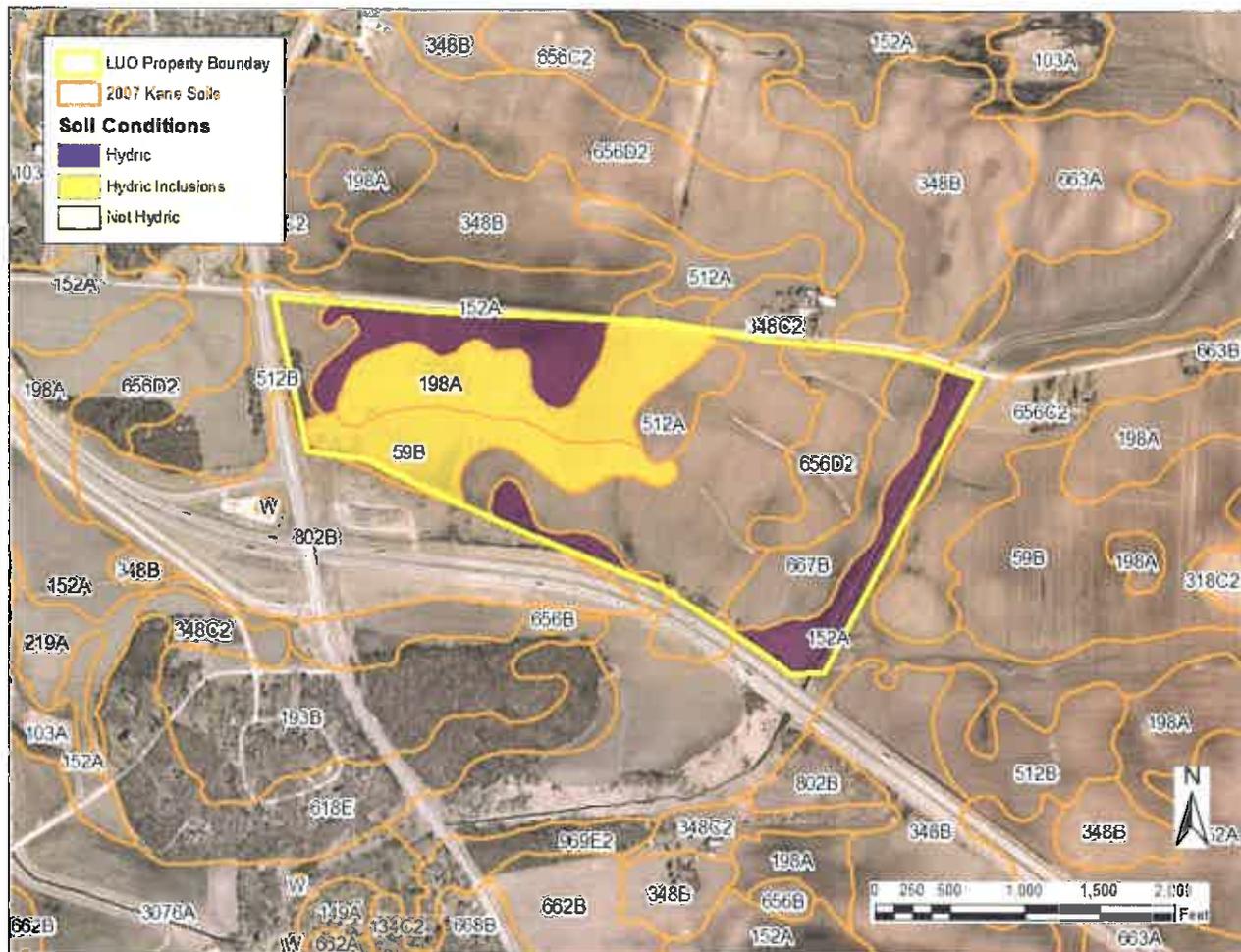


Figure 11: Hydric Soils

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County SSURGO soil layer certified in 2007. Hydric soils are shaded purple and soils with hydric inclusions are shaded yellow.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric inclusions are small areas, or inclusions, of nonhydric soils in the higher positions of the landform or map units dominantly made of nonhydric soils with inclusions of hydric soils in the low positions on the landform.

Hydric soils provide limitations for building site development due to their potential for ponding and poor drainage capacity. This often results in the need for improved drainage onsite prior to any proposed development. Any change to the natural drainage onsite has the potential to create flooding issues on and adjacent to the site. Hydric soils are often organic (peat or muck) and not suitable construction material. Hydric soils also may indicate wetlands onsite.

There are hydric soils and hydric inclusions on this site. A comprehensive soil assessment should be completed prior to any earth disturbing activities on this site.

LESA- PRIME FARMLAND

NOTE: The Kane County LESA System was revised and updated in 2004. Scores are reflected through a 33 point system used for the soils or Land Evaluation (LE) portion of the LESA Score.

Through the use of Kane County's Land Evaluation and Site Assessment System (LESA), a numerical value was determined for this site. The LESA System is designed to determine the quality of land for agricultural uses and to assess sites or land areas for their long term agricultural economic viability. In agricultural land evaluation, soils of a given area are rated ranging from the best to the worst suited for a stated agricultural use, i.e., cropland, forest land, or rangeland. A relative value is determined for each soil. The best soils are assigned a value of 33 and all others are assigned lower values. Therefore, the closer the relative value is to 33, the more valuable and more pro-

ductive the site's soils are for agricultural purposes.

The land evaluation represents thirty-three percent of the total LESA score. It is based on data from the National Cooperative Soil Survey. The site assessment portion of a LESA represents sixty-seven percent of the LESA score. It is based on factors such as zoning and land use compatibility

The land evaluation for this site is 29, which does represent the upper percent level of agricultural productivity.

Our opinion is based on information from the following sources:

- Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.
- County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.
- United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory, Photo Year 1983-1984, Digitized 1985-1986.
- Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.
- Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.
- U.S. Geological Survey, Illinois Digital Orthophoto Quadrangles, 2006 photos, Published: Champaign, Illinois State Geological Survey, 2006.
- Nonpoint Source Pollution– What's it All About?. Illinois Environmental Protection Agency. <http://www.epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/what-is-nonpoint-source-pollution/index>. 2015 Illinois EPA .
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County, IL SSURGO soil layer certified in 2007, and DuPage County, IL SSURGO soil layer certified in 2007 and accompanying interpretations.
- Dey, W.S., A.M. Davis, and B.B. Curry, 2007, Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS.
- An on-site investigation conducted by the SWCD Resource Assistant, Jennifer Shroder on November 29, 2018.

We respectfully submit this information in compliance with the Illinois Soil and Water Conservation Districts Act (ILCS 70, 405/1 et seq). The District Board reviews proposed developments. Jennifer Shroder, Resource Assistant, prepared this report.

cc: Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Map unit: 59B - Lisbon silt loam, 2 to 4 percent slopes

Component: Lisbon (92%)

The Lisbon component makes up 92 percent of the map unit. Slopes are 2 to 4 percent. This component is on ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 152A - Drummer silty clay loam, 0 to 2 percent slopes

Component: Drummer, drained (94%)

The Drummer, drained component makes up 94 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria.

Map unit: 198A - Elburn silt loam, 0 to 2 percent slopes

Component: Elburn (93%)

The Elburn component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 348C2 - Wingate silt loam, 5 to 10 percent slopes, eroded

Component: Wingate (92%)

The Wingate component makes up 92 percent of the map unit. Slopes are 5 to 10 percent. This component is on ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map unit: 512A - Danabrook silt loam, 0 to 2 percent slopes

Component: Danabrook (90%)

The Danabrook component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 656D2 - Octagon silt loam, 6 to 12 percent slopes, eroded

Component: Octagon (92%)

The Octagon component makes up 92 percent of the map unit. Slopes are 6 to 12 percent. This component is on end moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer, dense material, is 24 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: 667B - Kaneville silt loam, 2 to 5 percent slopes

Component: Kaneville (92%)

The Kaneville component makes up 92 percent of the map unit. Slopes are 2 to 5 percent. This component is on outwash plains. The parent material consists of Loess and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: 802B - Orthents, loamy, undulating

Component: Orthents, loamy (92%)

The Orthents, loamy component makes up 92 percent of the map unit. Slopes are 1 to 6 percent. This component is on leveled land. The parent material consists of earthy fill. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during February, March, April. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Dwellings With Basements

Rating Options

Attribute Name: Dwellings With Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 59B | Lisbon silt loam, 2 to 4 percent slopes | Very limited | Lisbon 92% Depth to saturated zone Shrink-swell Elpaso 8% Ponding Depth to saturated zone Shrink-swell |
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Very limited | Elburn 93% Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell Thorp, drained 2% Ponding Depth to saturated zone Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Depth to saturated zone Shrink-swell |
| 512A | Danabrook silt loam, 0 to 2 percent slopes | Somewhat limited | Danabrook 90% Depth to saturated zone Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Somewhat limited | Octagon 92% Depth to saturated zone Slope |
| 667B | Kaneville silt loam, 2 to 5 percent slopes | Somewhat limited | Kaneville 92% Depth to saturated zone Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell Depth to saturated zone |

Dwellings Without Basements

Rating Options

Attribute Name: Dwellings Without Basements

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 59B | Lisbon silt loam, 2 to 4 percent slopes | Somewhat limited | Lisbon 92% Depth to saturated zone Shrink-swell |
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Shrink-swell |
| 512A | Danabrook silt loam, 0 to 2 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 656D2 | Octagon silt loam, 8 to 12 percent slopes, eroded | Somewhat limited | Octagon 92% Slope Shrink-swell |
| 667B | Kaneville silt loam, 2 to 5 percent slopes | Somewhat limited | Kaneville 92% Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell |

Small Commercial Buildings

Rating Options

Attribute Name: Small Commercial Buildings

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 59B | Lisbon silt loam, 2 to 4 percent slopes | Somewhat limited | Lisbon 92% Depth to saturated zone Shrink-swell |
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Slope Shrink-swell |
| 512A | Danabrook silt loam, 0 to 2 percent slopes | Somewhat limited | Danabrook 90% Shrink-swell |
| 656D2 | Octagon silt loam, 6 to 12 percent slopes, eroded | Very limited | Octagon 92% Slope Shrink-swell Elpaso 4% Ponding Depth to saturated zone Shrink-swell Herbert 4% Depth to saturated zone Shrink-swell |
| 667B | Kaneville silt loam, 2 to 5 percent slopes | Somewhat limited | Kaneville 92% Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell |

CONTACTS

Federal Agencies

U. S. Army Corps of Engineers

Regulatory Branch
231 S LaSalle Street, Suite 1500
Chicago, Illinois 60604
(312)846-5330

<http://www.usace.army.mil>

U.S.D.A. Natural Resources Conservation Service

2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3

<http://www.il.nrcs.usda.gov/>

U.S. Fish & Wildlife Service

Chicago Illinois Field Office
230 South Dearborn Suite 2938
Chicago, IL 60604
(847)298-3250

<http://www.fws.gov/>

U.S. Environmental Protection Agency

Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
(312)353-2000 or (800)621-8431

<http://www.epa.gov/region5/>
r5hotline@epa.gov

State Agencies

Illinois Department of Natural Resources

1 Natural Resources Way
Springfield, Illinois 62702-1271
(217)782-6302

<http://dnr.state.il.us/>

Illinois Environmental Protection Agency

1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-3397

<http://www.epa.state.il.us/>

Illinois Department of Transportation

2300 South Dirksen Parkway
Schaumburg, Illinois 62764-0001
(217)782-7820/(800)452-4368

<http://www.idot.illinois.gov/>

Illinois Natural History Survey

1816 South Oak Street MC652
Champaign, Illinois 61820
(217)333-6880

<http://www.inhs.uiuc.edu/>

County Offices

Kane County

Government Center
719 South Batavia Ave.
Geneva, IL 60134
(630)232-3400

<http://www.countyofkane.org/>

Development Department

(630)232-3492

Department of Environmental Management

(630)208-5118

Forest Preserve District

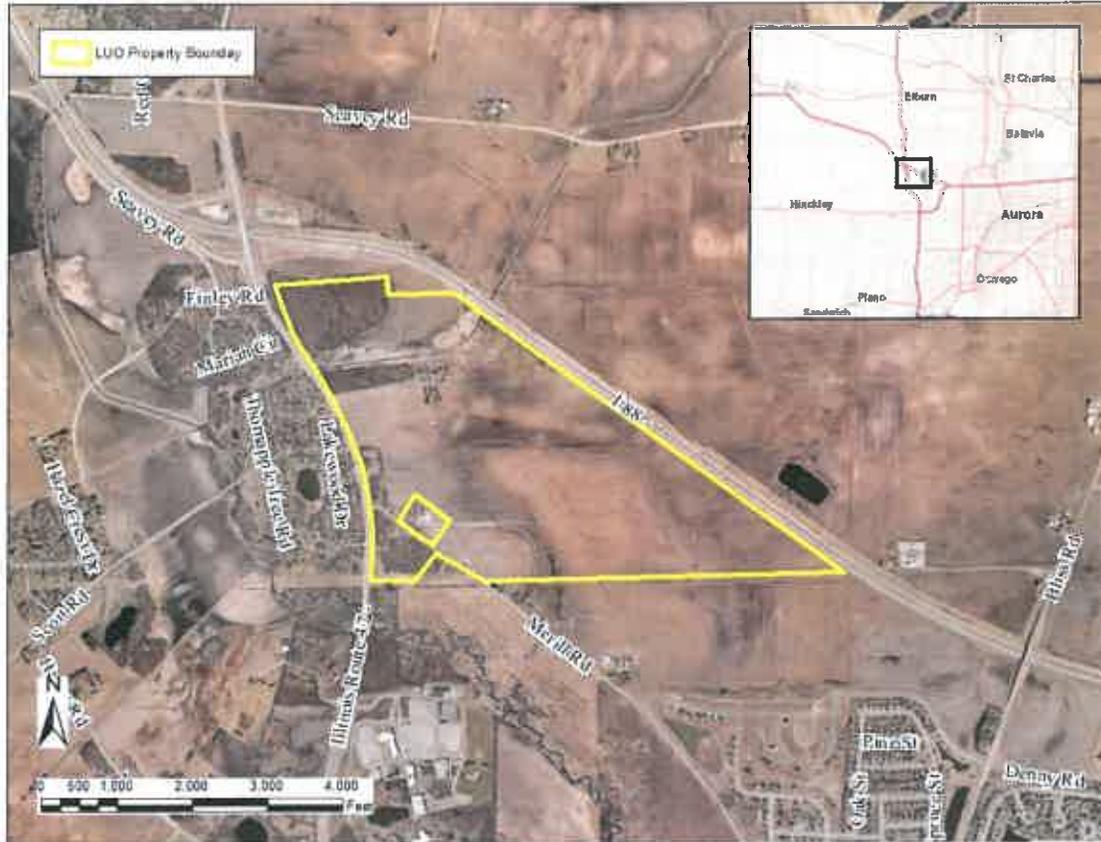
1996 South Kirk Road, Suite 320
Geneva, IL 60134
(630)232-5980
forestpreserve.countyofkane.org

Health Department

1240 North Highland Avenue
Aurora, IL 60506
(630)208-3801

**KANE-DUPAGE
SOIL AND WATER CONSERVATION DISTRICT**

**LAND USE OPINION
18-107D**



December 3, 2018

**Prepared for:
Village of Sugar Grove**

**Petitioner:
Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563**

Petitioner: Crown Community Development, 1751 A West Diehl Rd, Naperville, IL 60563

Contact Person: Daniel J. Olsem, 630-851-5490

Unit of Government Responsible for Permits: Village of Sugar Grove

Acreage: 360.82

Property Address/PIN#: Northwest corner of Merrill Road and Illinois Route 47

Existing Land Use: Agriculture

Surrounding Land Use: Agriculture

Proposed Land Use: Residential/Commercial

Natural Resource Concerns

Land Cover in the Early 1800's: This site is located in an area previously identified as forest, prairie and cultural. (See page 2 for more information.)

Kane County Green Infrastructure Plan: This site is located in an area indicated as Environmental Resource Area (with buffer), Wetlands, and Remnant Oak Woodlands, Open Space. (See page 3.)

Wetlands: The National Wetland Inventory map and the ADID wetland map identify wetland areas on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of any wetlands. (See page 4 & 5 for more wetland information.)

Floodplain: There are floodplain areas identified on this site. (See page 7.)



Streams: A stream has been identified on this site. (See page 8.)

Regulations: Please note that additional permits are required for any development impacting wetlands, streams or floodplain areas. Please see page 9 for regulation information.

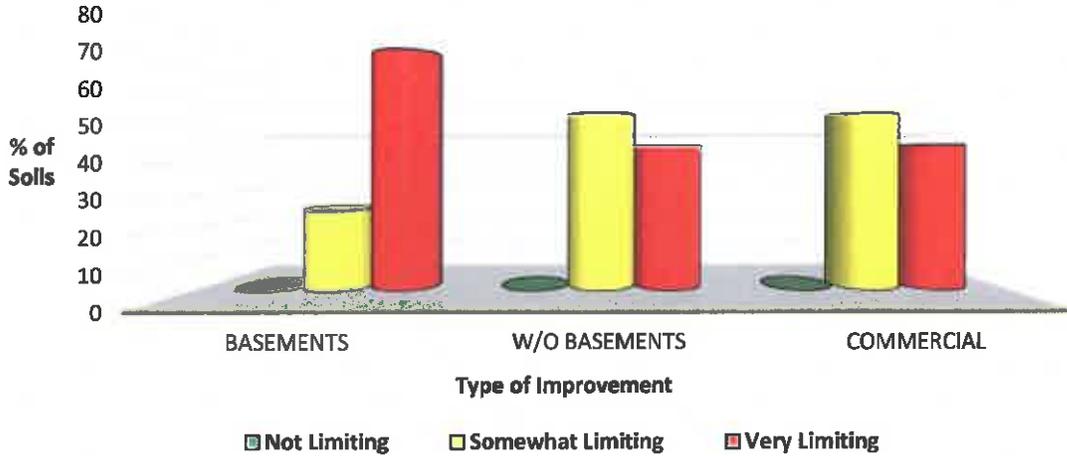
Aquifer Sensitivity: This site is classified as having a high to moderately low potential for aquifer contamination. (See page 10.)

Topography and Drainage: Please refer to page 11 for information regarding site topography and drainage.

Stormwater: See page 12 for information regarding stormwater management.

Soil Erosion: Any development on this site should include a soil erosion and sediment control plan. (See page 12.)

Building Limitations: Soils at this site may contain limitations for dwellings with basements, dwellings without basements, and small commercial buildings. See page 15 and attached Soils Tables located on the final pages this report. All information is from the Soil Survey of Kane County, Illinois.



Hydric Soils: There are hydric soils and soils with hydric inclusions identified on this site. (See page 16.)



LESA-Prime Farmland: Sites with a score of 26-33 or greater on the Land Evaluation (LE) portion of the LESA score are considered to have high value farmland soils. This site has a score of 27 placing it within the definition of high value soils/prime farmland. (See Page 17 for more information.)

LAND USE OPINION

Land Use Opinion: The most current natural resource data indicates the following concerns for this site: **Stream On-site, Wetlands, Floodplain, Soil Limitations, Aquifer Sensitivity, LESA – Prime Farmland, Soil Erosion and Sediment Control, and Stormwater Management.** Based on the information in this report, it is the opinion of the Kane-DuPage Soil and Water Conservation District Board that this site is **not suited** for land use change **unless** the previously mentioned concerns are addressed.

SITE INSPECTION

A site inspection was conducted by Resource Assistant, Jennifer Shroder on November 29, 2018. The following photos were taken during this inspection and reflect the site conditions at that time.



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PURPOSE AND INTENT

This report presents natural resource information to officials of the local governing body and other decision makers. Decisions concerning variations, amendments or relief of local zoning ordinance may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands because of these decisions may reference this report. This report is a requirement under the Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report intends to present the most current natural resource information available in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other. This information comes from standardized data, on-site investigations and other information furnished by the petitioner.

Please read the entire report to coordinate and inter-relate all natural resource factors considered. This report, when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county.

The conclusion of this report in no way indicates the impossibility of a certain land use. However, it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Please direct technical questions about data supplied in this report to:

Kane-DuPage
Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175
Phone: (630) 584-7960

LAND COVER IN THE EARLY 1800'S

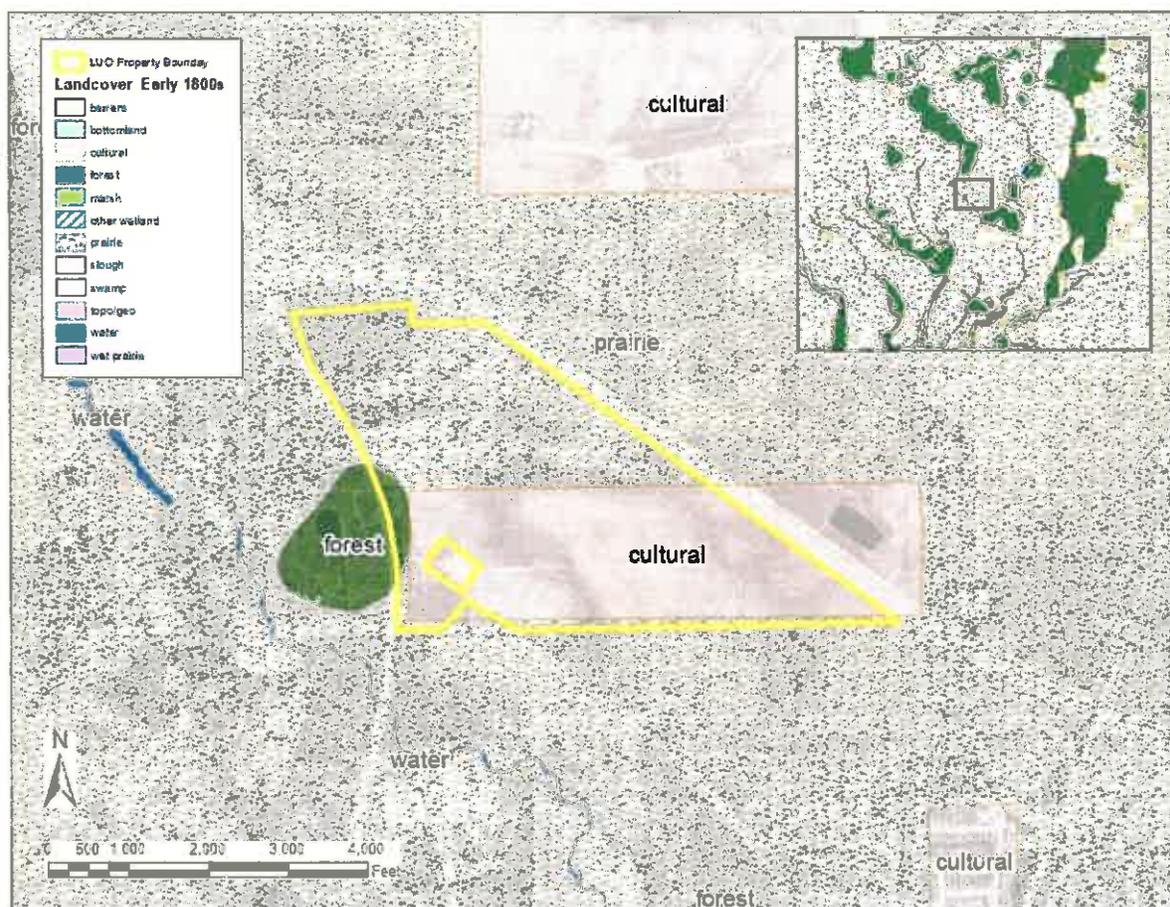


Figure 1: Land Cover in the Early 1800's

Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.

These surveys represent one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. They predate our county land ownership maps and atlases. These plat maps and field notebooks contain a wealth of information about what the landscape was like before the flood of settlers came into the state.

The vast majority of the landscape of Illinois in the early 1800's consisted of two different natural resource areas. These two areas were prairie and forest. Prairie and woodland ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities

- improve soil health and reduce soil loss
- improve air and water quality

Other designations include, cultural (or agricultural area), marsh, wet prairie, wetland, barrens and water. Please note that these designations are based on surveys taken in the early 1800's, and may not represent exact site conditions.

This site is located in an area surveyed as forest, prairie, and cultural on the land cover in the early 1800's map. The District recommends preserving as much as of the natural character of the site as possible during this land use change. It is also recommended that native plants be utilized for landscaping whenever possible. Removal of invasive species is also encouraged.

GREEN INFRASTRUCTURE

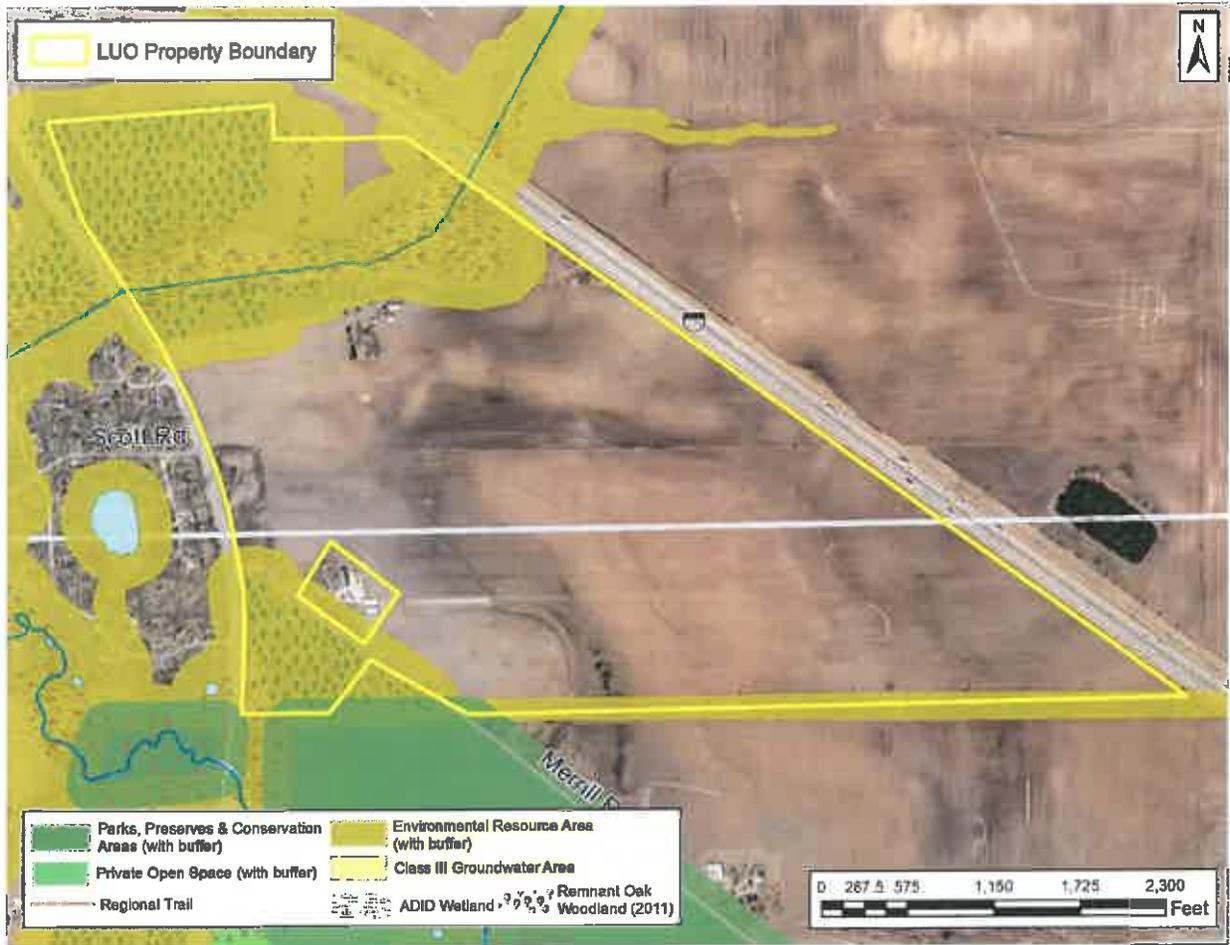


Figure 2: Kane County Green Infrastructure Plan

County of Kane. “Kane County 2040 Green Infrastructure Plan”. Adopted December 10, 2013.

From the Kane County Green Infrastructure Plan, “Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County 2040 Green Infrastructure Plan includes analysis of existing natural resources in the County and recommendations for green infrastructure priorities and approaches. The ultimate goal of the Kane County 2040 Green infrastructure Plan is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood and site levels.”

The benefits of green infrastructure include:

- Preservation of habitat and biodiversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority areas as designated on the Kane County 2040 Green Infrastructure Plan: Streams, Wetlands, Remnant Oak Woodlands, Environmental Resource Area (with buffer) and Open Space.

NWI WETLANDS

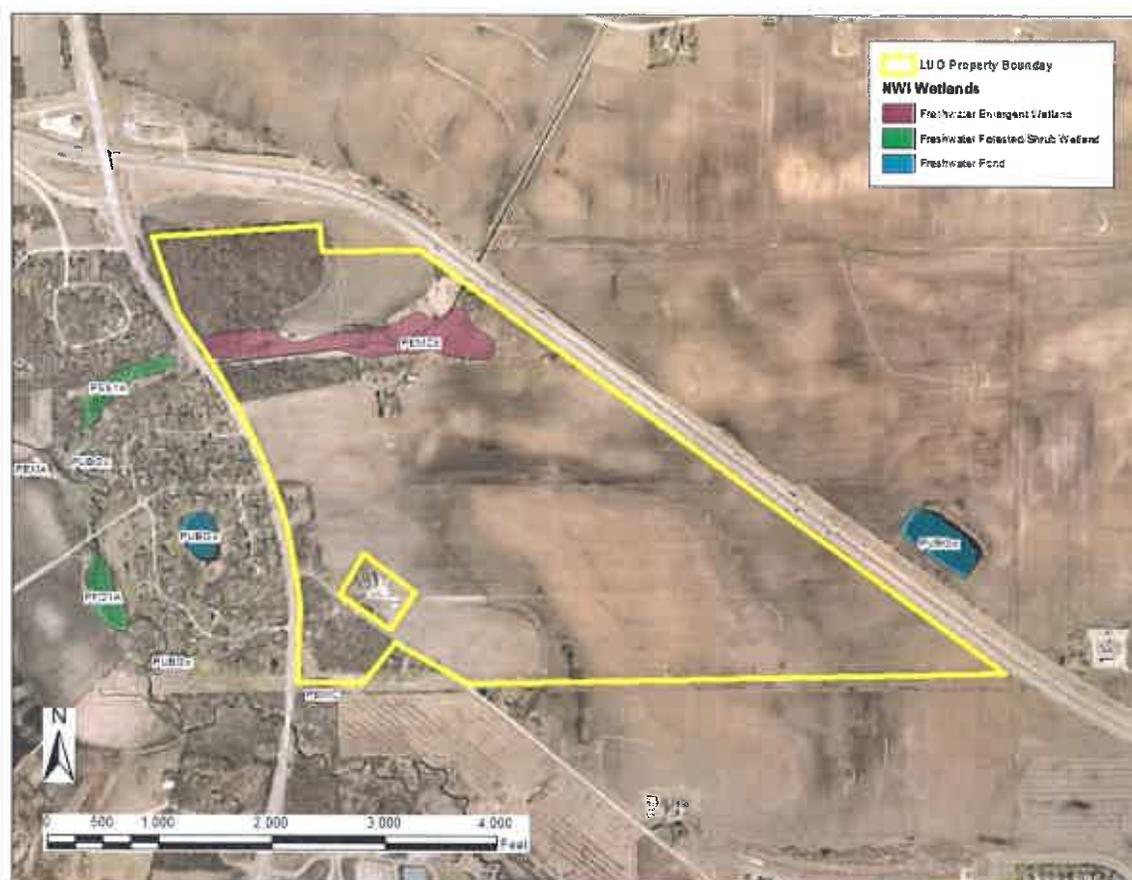


Figure 3: National Wetland Inventory Map

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Photo Year 1983-1984, Digitized 1985-1986.

Wetlands are some of the most productive and diverse ecological systems on earth. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Some other common wetlands located in this part of Illinois are fens and wet meadows.

Wetlands function in many ways to benefit mankind. Some of their many functions and benefits include:

- Controlling flooding by offering a slow release of excess water downstream or through the soil.

- Cleansing water by filtering out sediment and pollutants.
- Functioning as rechargers of our valuable groundwater.
- Providing essential breeding, rearing, and feeding grounds for many species of wildlife.

The National Wetland Inventory Map identifies wetlands on this site. The types of wetlands identified on this site include: PEMCd— Palustrine Emergent Seasonally Flooded partly drained/ditched. A wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of these wetlands. Please see page 8 for wetland regulation information.

ADID WETLANDS

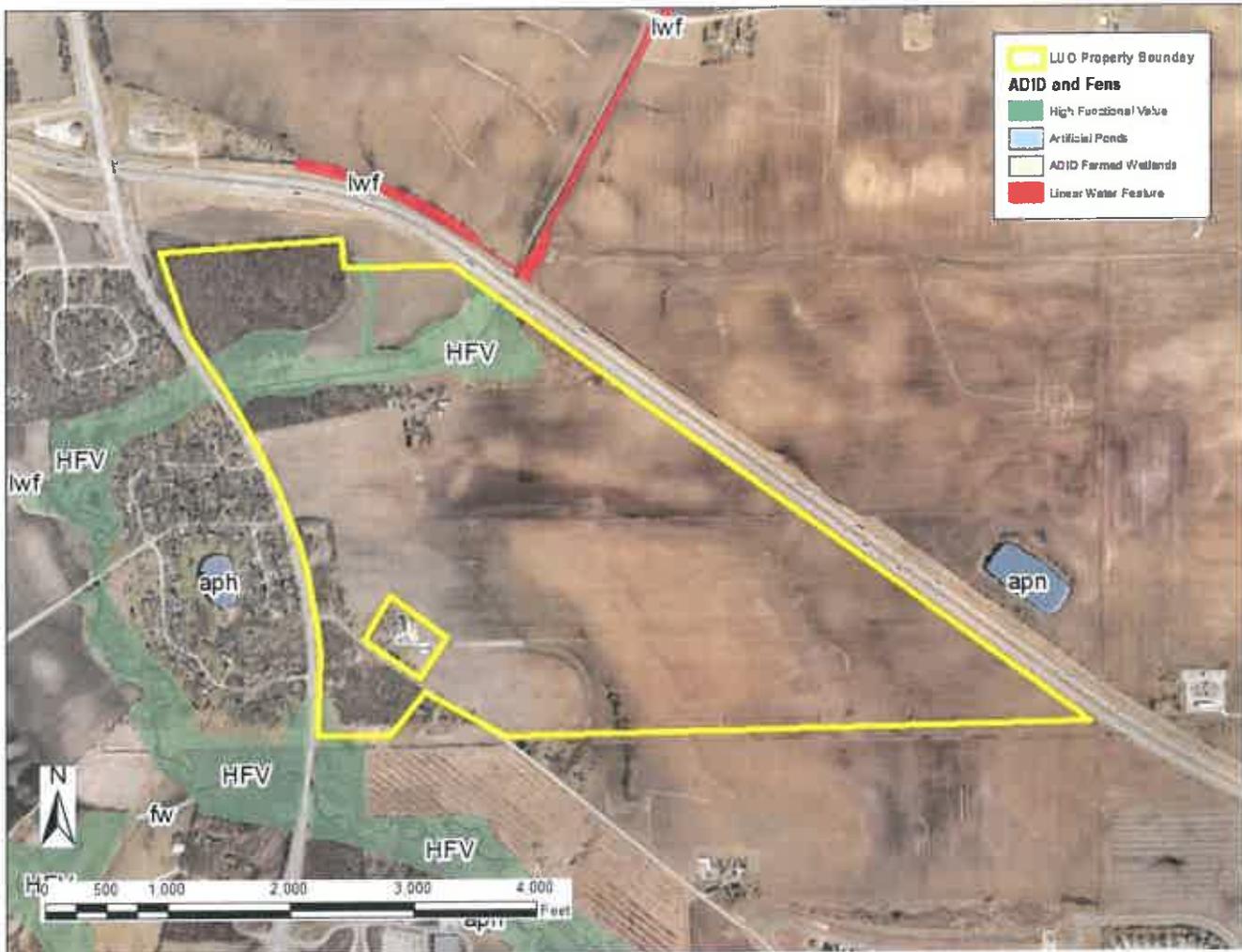


Figure 4: ADID Wetlands

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Released in August of 2004, the Kane County Advanced Identification of Aquatic Resources (or ADID) study is a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in the county. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This infor-

mation can be used by federal, state, and local governments to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration, acquisition, or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the full Kane County ADID study at : <http://dewprojects.countyofkane.org/adid/index.htm>

An ADID wetland was identified on this site. This wetland has been designated as having a high functional value.

WETLANDS PHOTOS



Figure 5: Wetlands photos



Point 1: Facing northeast



Point 2: Facing east

FLOODPLAIN

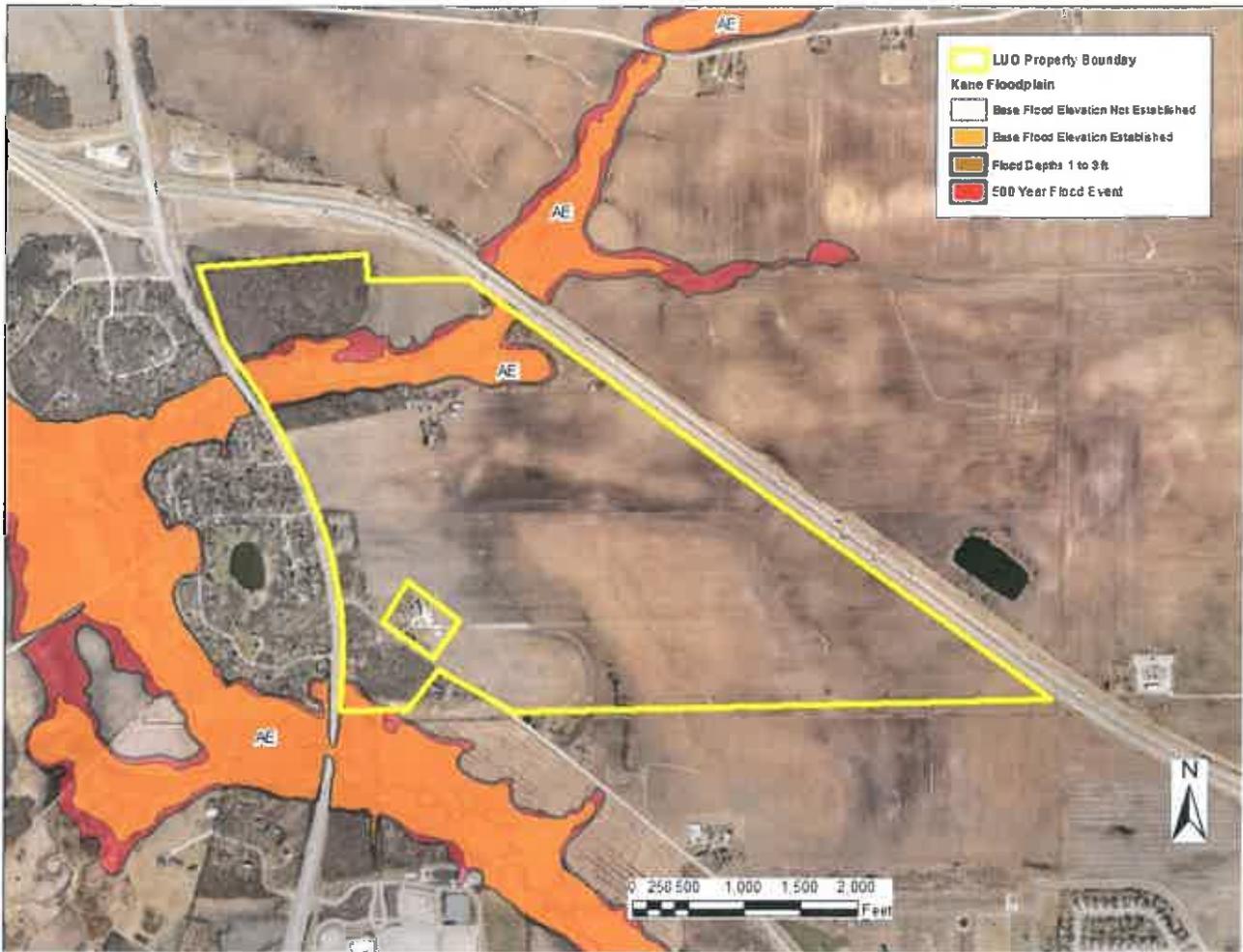


Figure 6: Floodplain Map

Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.

From FEMA's Floodplain Natural Resources and Functions Chapter 8, "Undeveloped floodplain land provides many natural resources and functions of considerable economic, social and environmental value. Nevertheless, these and other benefits are often overlooked when local land-use decisions are made. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment."

There are so many benefits of the floodplain that not all can be listed here, but the following is a general list of benefits and functions:

- natural flood storage and erosion control
- water quality maintenance
- groundwater recharge
- nutrient filtration
- biological productivity/wildlife habitat
- recreational opportunities/aesthetic value

According to the Flood Insurance Rate Map, approximately 7 % of this site is within the boundaries of a 100-year floodplain. This development may impede the beneficial functions of the floodplain. Please see 8 for information regarding floodplain regulations.

STREAMS AND WATERSHED MANAGEMENT

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA– Nonpoint Source Pollution).

The Illinois Environmental Protection Agency provides the following in regards to nonpoint source pollution, “Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification.”

Local watershed management planning is an important effort that involves citizens of a watershed in the protection of their local water resources. Water quality is a reflection of its watershed.

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage

- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

There are many subwatershed plans that have already been developed in Kane County. Please follow the link to the Kane County 2040 Green Infrastructure Plan. See page 108 for a list of local watershed plans.

<http://countyofkane.org/FDER/Pages/development/planning.aspx>

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a “dead zone” located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois’s Plan for reducing nutrient loss here:

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy/index>

REGULATORY INFORMATION

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat As well as recreational resources. Unregulated use of waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

REGULATORY AGENCIES:

Wetland/U.S. Waters: U.S. Army Corps of Engineers, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312) 353-6400.

<http://www.lrc.usace.army.mil/>

Wetland/Isolated: Kane County Water Resources Division, 719 Batavia Avenue, Geneva, IL 60134. (630)232-3400.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/water.aspx>

Floodplains: Illinois Department of Natural Resources\Office of Water Resources, 2050 W. Stearns Road, Bartlett, IL 60103. (847)608-3100.

<https://www.dnr.illinois.gov/WaterResources/Pages/Permit%20Programs.aspx>

Who Must Apply:

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, floodplain or floodway subject to State or Federal regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

NPDES General Construction Permit ILR10: Illinois Environmental Protection Agency, Division of Water Pollution Control, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794. (217)782-0610.

<http://www.epa.illinois.gov/topics/forms/water-permits/storm-water/construction/index>

Coordination: We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate/compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stage. This could reduce time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

AQUIFER SENSITIVITY

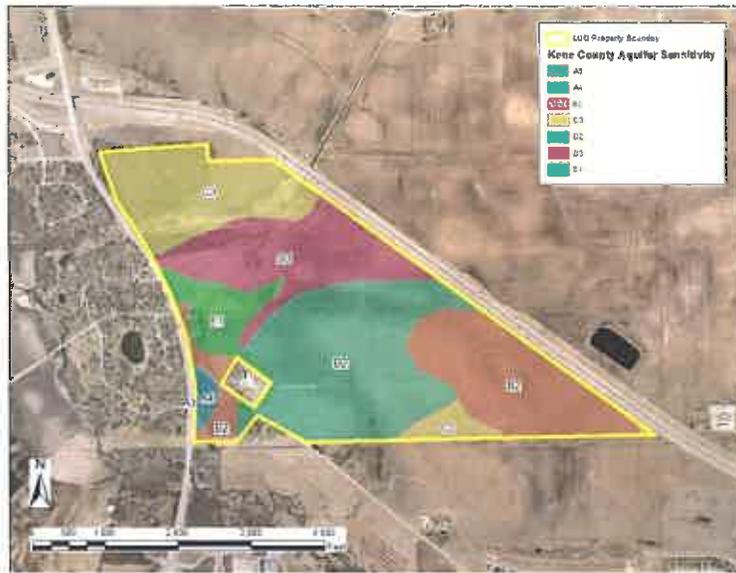


Figure 7: Aquifer Sensitivity Map

Dey, W.S., A.M. Davis, and B.B. Curry 2007, *Aquifer Sensitivity to Contamination, Kane County, Illinois*: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as “a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer.”

Aquifers function as a storage area for groundwater recharge, which makes them a reliable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. This site is classified as having a moderately low potential for contamination.

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

| | | | |
|-----------|---|-----------|---|
| A1 | Aquifers are greater than 50ft thick and within 5ft of the surface | C1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| A2 | Aquifers are greater than 50ft thick and between 5 and 20ft below the surface | C2 | Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface |
| A3 | Aquifers are between 20 and 50ft thick and within 5ft of the surface | C3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface |
| A4 | Aquifers are between 20 and 50ft thick and between 5 and 20ft below the surface | D1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| B1 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface | D2 | Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface |
| B2 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface | D3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface |
| E1 | Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface | | |

TOPOGRAPHY AND DRAINAGE

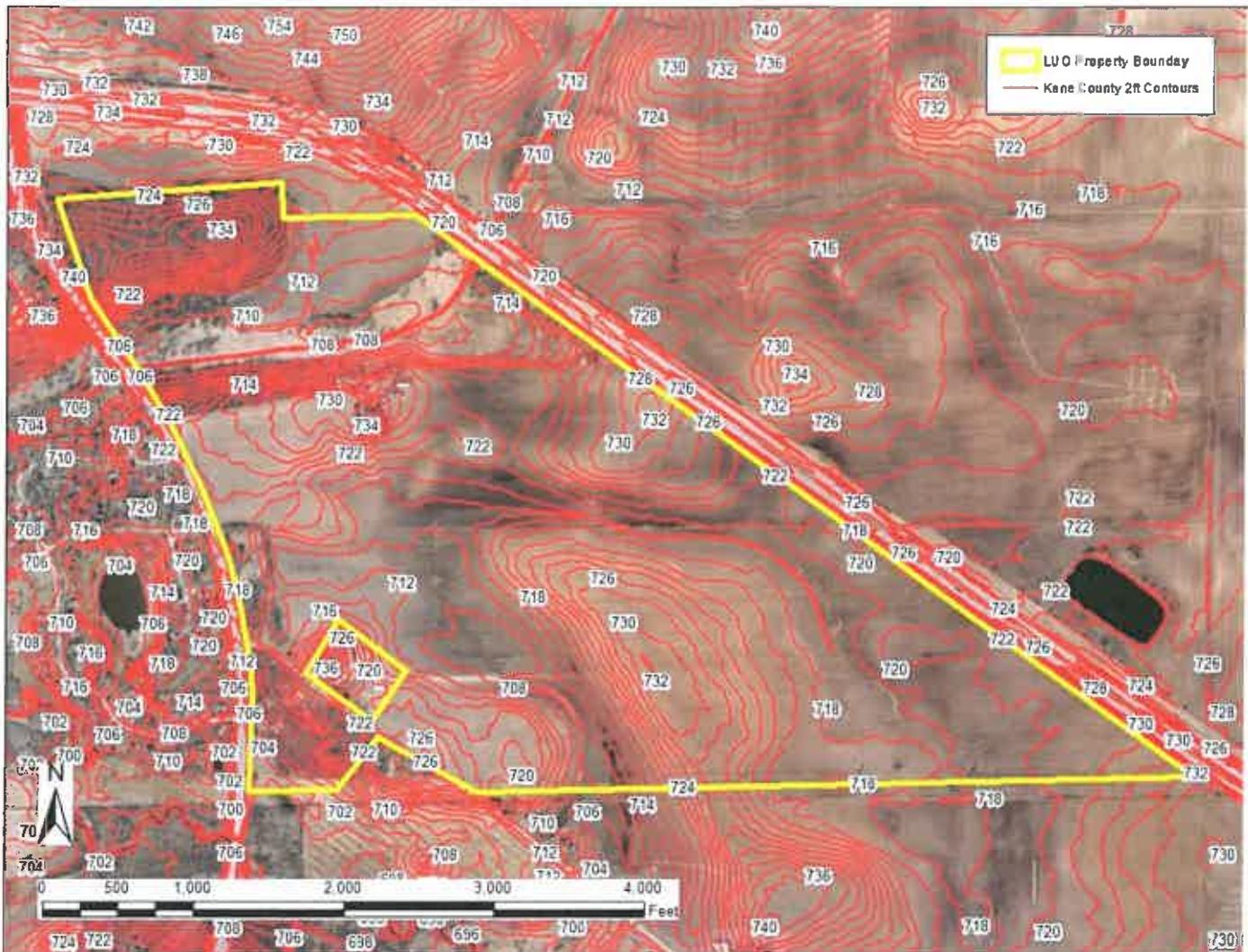


Figure 8: Municipalities 2 Ft Contours

USGS Topographic maps and other topographic surveys give information on elevations, which are important to determine slopes, natural drainage directions, and watershed information. Elevations determine the area of impact of flooding. Slope information determines steepness and erosion potential of the site. Slope has the greatest impact in determining the erosion potential of a site during construction activities. Drainage directions determine where water leaves the property in question, possibly impacting surrounding natural resources.

It is important to consider drainage during any proposed construction onsite. Any areas where water leaves the site should be monitored for potential pollutants which could contaminate downstream waters.

The high point of this property is located in the southwestern portion of the site at an elevation of approximately 734 feet above mean sea level. The property generally drains in all directions via overland and via concentrated flow in a stream. The lowest elevation on the property is approximately 700 feet above sea level.

TOPOGRAPHY AND DRAINAGE

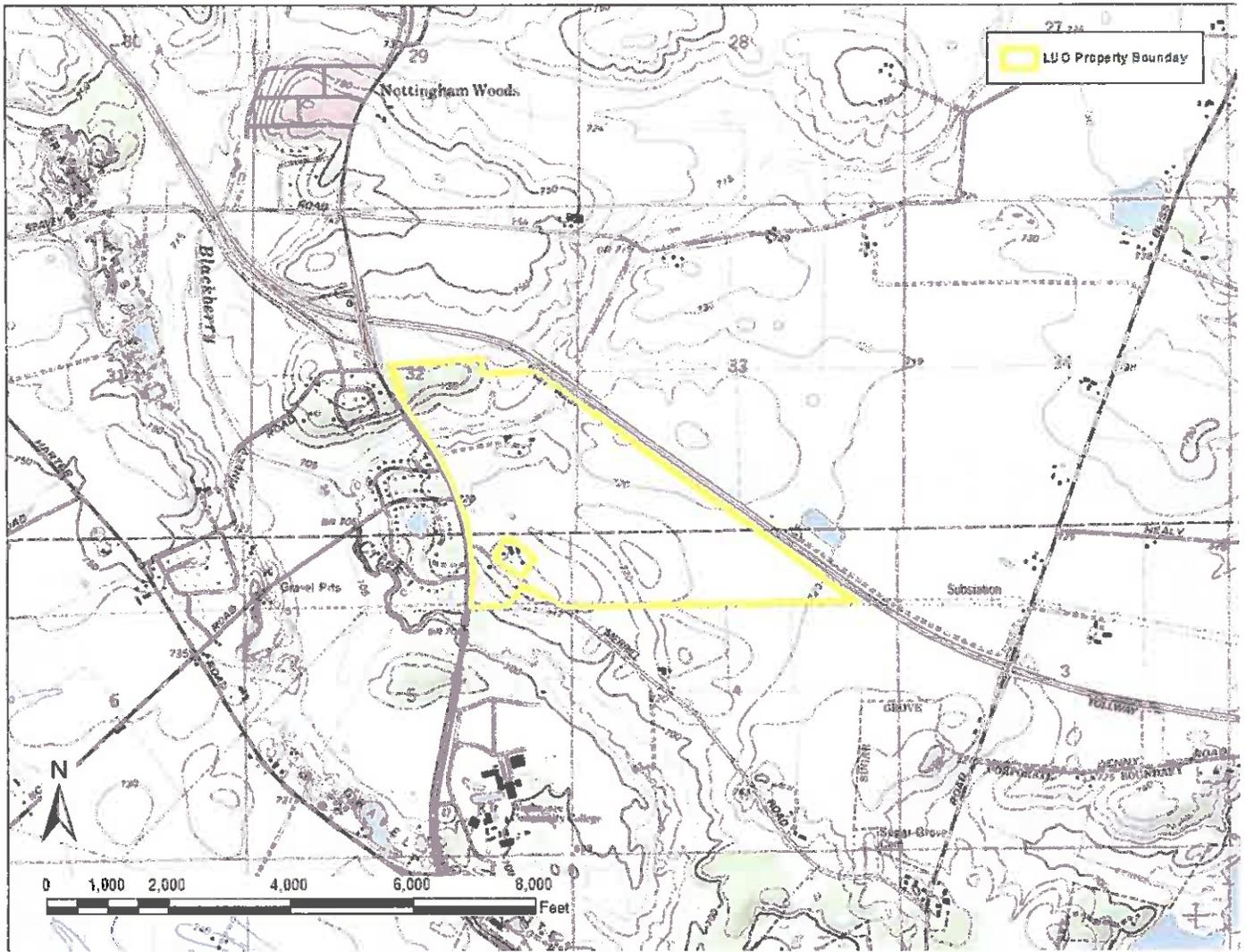


Figure 9: USGS Topographic Map

STORMWATER

Any proposed removal of vegetation, compaction of soil, and addition of impervious surfaces (rooftops, roadways, etc.) will greatly increase the amount of stormwater runoff generated on this site. The District recommends the use of onsite stormwater management strategies whenever possible. IEPA now recommends that stormwater pollution prevention plans include post-construction stormwater management which retains the greatest amount of post-development stormwater runoff practicable, given the site and project constraints. From the ILR10 permit for construction sites 1 acre or more, "Such practices include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open

vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices)."

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources/>

SOIL EROSION

Development on this site should include the use of a soil erosion and sedimentation control plan. Due to the soil type and slope of the site, the District believes that the potential for soil erosion during and after any proposed construction could be **large**. Furthermore, the erosion and resulting sedimentation may become a **primary nonpoint source** of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

Erosion and sedimentation control measures include: 1) staging the construction to minimize the amount of disturbed areas present at the same time, 2) maintaining or planting vegetative groundcover, and 3) keeping runoff velocities low.

Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois.

SOILS INFORMATION

IMPORTANCE OF SOILS INFORMATION

Soils information is taken from the Soil Survey of Kane County, Illinois, United States Department of Agriculture, Natural Resource Conservation Service. This information is important to all parties involved in determining the suitability of the proposed land use change.

SOIL MAP UNITS

The soil survey map of this area (Figure 1) indicates soil map units. Each soil map unit has limitations for a variety of land uses such as septic systems, and buildings site development, including dwellings with and without basements. All of the soils contain **very limiting** conditions for building site development. **See Soils Interpretations section and attached Soil Tables.**

The Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of Kane County, Illinois. The soils were mapped at a scale of 1:12,000. The enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of the mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

LIST OF SOIL MAP UNITS

| SOIL MAP UNIT | PERCENT | | ACRES |
|--------------------------------|-----------|--------------|---------------|
| | OF PARCEL | | |
| 149A—Brenton | 3% | | 12.08 |
| 152A—Drummer | 37% | | 133.05 |
| 193B—Mayville | 6% | | 21.66 |
| 198A—Elburn | 2% | | 8.65 |
| 206A—Thorp | 1% | | 2.45 |
| 219A—Millbrook | 1% | | 4.03 |
| 344C2—Harvard | 1% | | 4.94 |
| 348B—Wingate | 24% | | 87.44 |
| 348C2—Wingate | 5% | | 19.29 |
| 442A—Mundelein | 1% | | 3.96 |
| 618E—Senechwine | 4% | | 12.97 |
| 656B—Octagon | 1% | | 1.97 |
| 656C2—Octagon | 2% | | 7.37 |
| 662B—Barony | 5% | | 19.28 |
| 663A—Clare | 1% | | 2.90 |
| 668B—Somonauk | 2% | | 5.65 |
| 802B—Orthents | 2% | | 6.22 |
| 969E2—Casco-Rodman complex | 2% | | 5.77 |
| 3076A—Offer | <1% | | 1.14 |
| Table 1: Soil Map Units | | Total | 360.82 |

All percentages and acreages are approximate.

We suggest that a geotechnical engineer conduct an on site investigation. This should determine, specifically, what soils type is present at a particular location, along with its associated limitations or potential for a particular use. It will also assist in determining which types of engineering procedures are necessary to account for the limitations of the soil on the site.

BUILDING LIMITATIONS

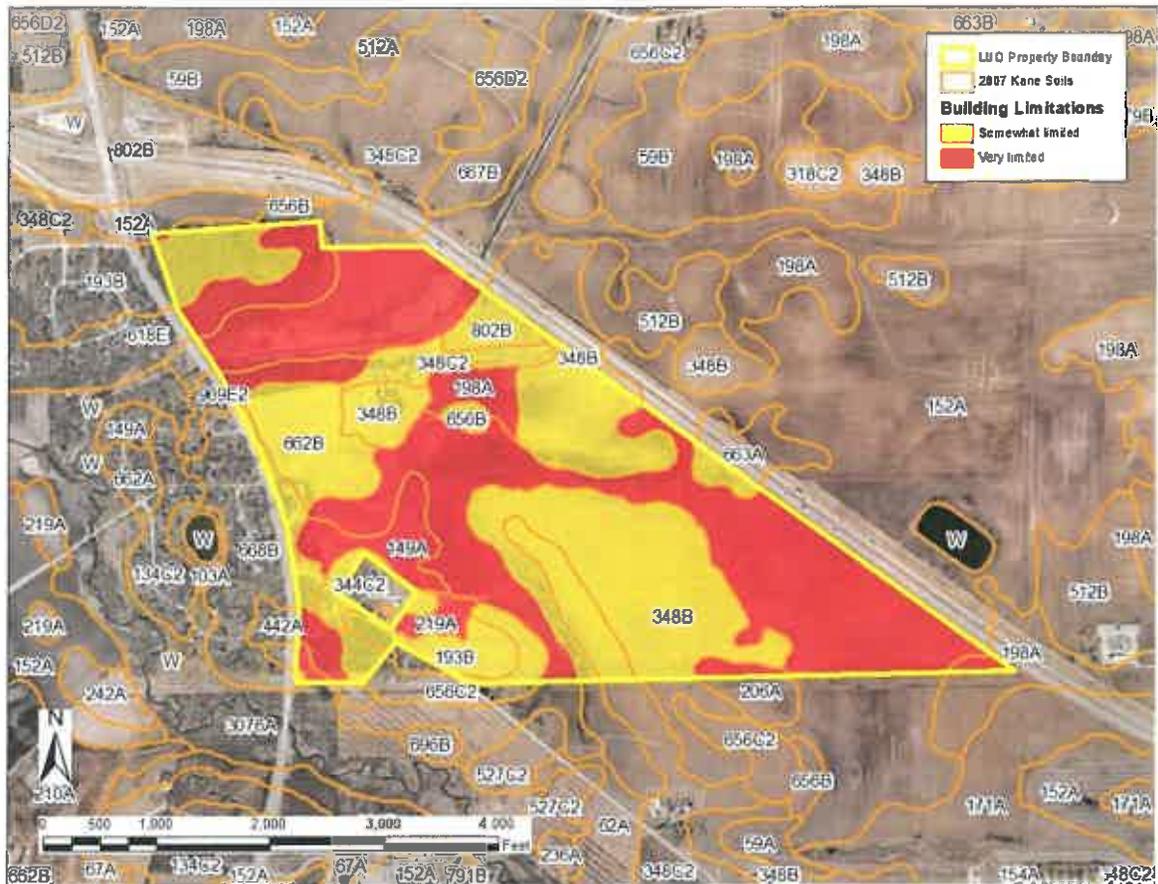


Figure 10: Soil Survey Map

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County SSURGO soil layer certified in 2007. Areas shaded red represent VERY LIMITING limitations for building site development, areas shaded yellow represent SOMEWHAT LIMITING limitations for building site development, and areas shaded green represent NOT LIMITING limitations for building site development.

The soil limitation ratings are used mainly for engineering designs of dwellings with or without basements, local streets and roads, small commercial buildings, septic tank absorption fields, and etc. The ratings of not limiting, somewhat limiting, and very limiting are based on national averages and are defined and used as follows:

Not Limiting (Slight) - This limitation rating indicates that the soil properties are generally favorable for the specified use and that any limitations are minor and easily overcome.

Somewhat Limiting (Moderate) - This rating indicates that the soil properties and site features are un-

favorable for the specified use, but that the limitations can be overcome or minimized with special planning and design.

Very Limiting (Severe) - This indicates that one or more soil properties or site features are very unfavorable and difficult. A major increase in construction effort, special designs, or intensive maintenance is required. These costly measures may not be feasible for some soils that are rated as severe.

There are limitations for building site development on this site. A comprehensive soil assessment should be completed prior to any earth disturbing activities on this site.

LESA- PRIME FARMLAND

NOTE: The Kane County LESA System was revised and updated in 2004. Scores are reflected through a 33 point system used for the soils or Land Evaluation (LE) portion of the LESA Score.

Through the use of Kane County's Land Evaluation and Site Assessment System (LESA), a numerical value was determined for this site. The LESA System is designed to determine the quality of land for agricultural uses and to assess sites or land areas for their long term agricultural economic viability. In agricultural land evaluation, soils of a given area are rated ranging from the best to the worst suited for a stated agricultural use, i.e., cropland, forest land, or rangeland. A relative value is determined for each soil. The best soils are assigned a value of 33 and all others are assigned lower values. Therefore, the closer the relative value is to 33, the more valuable and more pro-

ductive the site's soils are for agricultural purposes.

The land evaluation represents thirty-three percent of the total LESA score. It is based on data from the National Cooperative Soil Survey. The site assessment portion of a LESA represents sixty-seven percent of the LESA score. It is based on factors such as zoning and land use compatibility

The land evaluation for this site is 27, which does represent the upper percent level of agricultural productivity.

Our opinion is based on information from the following sources:

- Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.
- County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.
- United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory, Photo Year 1983-1984, Digitized 1985-1986.
- Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.
- Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.
- U.S. Geological Survey, Illinois Digital Orthophoto Quadrangles, 2006 photos, Published: Champaign, Illinois State Geological Survey, 2006.
- Nonpoint Source Pollution— What's it All About?. Illinois Environmental Protection Agency. <http://www.epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/what-is-nonpoint-source-pollution/index>. 2015 Illinois EPA .
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County, IL SSURGO soil layer certified in 2007, and DuPage County, IL SSURGO soil layer certified in 2007 and accompanying interpretations.
- Dey, W.S., A.M. Davis, and B.B. Curry, 2007, Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS.
- An on-site investigation conducted by the SWCD Resource Assistant, Jennifer Shroder on November 29, 2018.

We respectfully submit this information in compliance with the Illinois Soil and Water Conservation Districts Act (ILCS 70, 405/1 et seq). The District Board reviews proposed developments. Jennifer Shroder, Resource Assistant, prepared this report.

cc: Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Map unit: 149A - Brenton silt loam, 0 to 2 percent slopes

Component: Brenton (90%)

The Brenton component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 152A - Drummer silty clay loam, 0 to 2 percent slopes

Component: Drummer, drained (94%)

The Drummer, drained component makes up 94 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria.

Map unit: 193B - Mayville silt loam, 2 to 5 percent slopes

Component: Mayville (90%)

The Mayville component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on ground moraines on uplands. The parent material consists of loess over loamy till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, May, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface.

Map unit: 198A - Elburn silt loam, 0 to 2 percent slopes

Component: Elburn (93%)

The Elburn component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains on plains. The parent material consists of loess over stratified loamy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 206A - Thorp silt loam, 0 to 2 percent slopes

Component: Thorp (95%)

The Thorp component makes up 95 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of Loess and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria.

Map unit: 219A - Millbrook silt loam, 0 to 2 percent slopes

Component: Millbrook (90%)

The Millbrook component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: 344C2 - Harvard silt loam, 5 to 10 percent slopes, eroded

Component: Harvard (92%)

The Harvard component makes up 92 percent of the map unit. Slopes are 5 to 10 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: 348C2 - Wingate silt loam, 5 to 10 percent slopes, eroded

Component: Wingate (92%)

The Wingate component makes up 92 percent of the map unit. Slopes are 5 to 10 percent. This component is on ground moraines. The parent material consists of Loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map unit: 442A - Mundelein silt loam, 0 to 2 percent slopes

Component: Mundelein (92%)

The Mundelein component makes up 92 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 618E - Senachwine silt loam, 12 to 20 percent slopes

Component: Senachwine (90%)

The Senachwine component makes up 90 percent of the map unit. Slopes are 12 to 20 percent. This component is on end moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 656B - Octagon silt loam, 2 to 4 percent slopes

Component: Octagon (92%)

The Octagon component makes up 92 percent of the map unit. Slopes are 2 to 4 percent. This component is on ground moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: 656C2 - Octagon silt loam, 4 to 6 percent slopes, eroded

Component: Octagon (92%)

The Octagon component makes up 92 percent of the map unit. Slopes are 4 to 6 percent. This component is on ground moraines. The parent material consists of Thin mantle of loess or other silty material and in the underlying till. Depth to a root restrictive layer, densic material, is 24 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: 662B - Barony silt loam, 2 to 5 percent slopes

Component: Barony (92%)

The Barony component makes up 92 percent of the map unit. Slopes are 2 to 5 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: 663A - Clare silt loam, 0 to 2 percent slopes

Component: Clare (92%)

The Clare component makes up 92 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of loess over outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map unit: 668B - Somonauk silt loam, 2 to 5 percent slopes

Component: Somonauk (92%)

The Somonauk component makes up 92 percent of the map unit. Slopes are 2 to 5 percent. This component is on outwash plains. The parent material consists of Loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: 802B - Orthents, loamy, undulating

Component: Orthents, loamy (92%)

The Orthents, loamy component makes up 92 percent of the map unit. Slopes are 1 to 6 percent. This component is on leveled land. The parent material consists of earthy fill. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during February, March, April. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: 969E2 - Casco-Rodman complex, 12 to 20 percent slopes, eroded

Component: Casco, eroded (53%)

The Casco, eroded component makes up 53 percent of the map unit. Slopes are 12 to 20 percent. This component is on moraines on hills. The parent material consists of loamy alluvium over calcareous, stratified sandy and gravelly outwash. Depth to a root restrictive layer, strongly contrasting textural stratification, is 11 to 20 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 13 percent. There are no saline horizons within 30 inches of the soil surface.

Component: Rodman, eroded (37%)

The Rodman, eroded component makes up 37 percent of the map unit. Slopes are 12 to 20 percent. This component is on moraines on hills. The parent material consists of sandy and gravelly outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 28 percent. There are no saline horizons within 30 inches of the soil surface.

Map unit: 3076A - Otter silt loam, 0 to 2 percent slopes, frequently flooded

Component: Otter (90%)

The Otter component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria.

Dwellings With Basements

Rating Options

Attribute Name: Dwellings With Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 149A | Brenton silt loam, 0 to 2 percent slopes | Very limited | Brenton 90% Depth to saturated zone Shrink-swell |
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell Pectone, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 193B | Mayville silt loam, 2 to 5 percent slopes | Very limited | Mayville 90% Depth to saturated zone Elpaso, drained 10% Ponding Depth to saturated zone Shrink-swell |
| 198A | Eiburn silt loam, 0 to 2 percent slopes | Very limited | Eiburn 93% Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell Thorp, drained 2% Ponding Depth to saturated zone Shrink-swell |
| 206A | Thorp silt loam, 0 to 2 percent slopes | Very limited | Thorp 95% Ponding Depth to saturated zone Shrink-swell |
| 219A | Millbrook silt loam, 0 to 2 percent slopes | Very limited | Millbrook 90% Depth to saturated zone |
| 344C2 | Harvard silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Harvard 92% Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Depth to saturated zone Shrink-swell |

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|--|------------------|--|
| 442A | Mundelein silt loam, 0 to 2 percent slopes | Very limited | Mundelein 92% Depth to saturated zone Drummer 4% Ponding Depth to saturated zone Shrink-swell Peila 2% Ponding Depth to saturated zone |
| 618E | Senachwine silt loam, 12 to 20 percent slopes | Very limited | Senachwine 90% Slope Shrink-swell Casco 6% Slope Elpaso 2% Ponding Depth to saturated zone Shrink-swell Herbert 2% Depth to saturated zone |
| 656B | Octagon silt loam, 2 to 4 percent slopes | Somewhat limited | Octagon 92% Depth to saturated zone |
| 656C2 | Octagon silt loam, 4 to 6 percent slopes, eroded | Somewhat limited | Octagon 92% Depth to saturated zone |
| 662B | Barony silt loam, 2 to 5 percent slopes | Somewhat limited | Barony 92% Depth to saturated zone Shrink-swell |
| 663A | Clare silt loam, 0 to 2 percent slopes | Somewhat limited | Clare 92% Depth to saturated zone Shrink-swell |
| 668B | Somonauk silt loam, 2 to 5 percent slopes | Somewhat limited | Somonauk 92% Depth to saturated zone Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell Depth to saturated zone |
| 969E2 | Casco-Rodman complex, 12 to 20 percent slopes, eroded | Very limited | Casco, eroded 53% Slope Rodman, eroded 37% Slope |
| 3076A | Otter silt loam, 0 to 2 percent slopes, frequently flooded | Very limited | Otter 90% Ponding Flooding Depth to saturated zone |

Dwellings Without Basements

Rating Options

Attribute Name: Dwellings Without Basements

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 149A | Brenton silt loam, 0 to 2 percent slopes | Somewhat limited | Brenton 90% Depth to saturated zone Shrink-swell |
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 193B | Mayville silt loam, 2 to 5 percent slopes | Somewhat limited | Mayville 90% Depth to saturated zone Shrink-swell |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 206A | Thorp silt loam, 0 to 2 percent slopes | Very limited | Thorp 95% Ponding Depth to saturated zone Shrink-swell |
| 219A | Millbrook silt loam, 0 to 2 percent slopes | Very limited | Millbrook 90% Depth to saturated zone |
| 344C2 | Harvard silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Harvard 92% Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Shrink-swell |
| 442A | Mundelein silt loam, 0 to 2 percent slopes | Somewhat limited | Mundelein 92% Depth to saturated zone Orthents, loamy 1% Shrink-swell |
| 618E | Senachwine silt loam, 12 to 20 percent slopes | Very limited | Senachwine 90% Slope Shrink-swell Casco 6% Slope Elpaso 2% Ponding Depth to saturated zone Shrink-swell Herbert 2% Depth to saturated zone Shrink-swell |

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|--|------------------|---|
| 656B | Octagon silt loam, 2 to 4 percent slopes | Somewhat limited | Octagon 92% Shrink-swell |
| 656C2 | Octagon silt loam, 4 to 6 percent slopes, eroded | Somewhat limited | Octagon 92% Shrink-swell |
| 662B | Barony silt loam, 2 to 5 percent slopes | Somewhat limited | Barony 92% Shrink-swell |
| 663A | Clare silt loam, 0 to 2 percent slopes | Somewhat limited | Clare 92% Shrink-swell |
| 668B | Somonauk silt loam, 2 to 5 percent slopes | Somewhat limited | Somonauk 92% Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell |
| 969E2 | Casco-Rodman complex, 12 to 20 percent slopes, eroded | Very limited | Casco, eroded 53% Slope Rodman, eroded 37% Slope |
| 3076A | Otter silt loam, 0 to 2 percent slopes, frequently flooded | Very limited | Otter 90% Ponding Flooding Depth to saturated zone |

Small Commercial Buildings

Rating Options

Attribute Name: Small Commercial Buildings

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|---|------------------|---|
| 149A | Brenton silt loam, 0 to 2 percent slopes | Somewhat limited | Brenton 90% Depth to saturated zone Shrink-swell |
| 152A | Drummer silty clay loam, 0 to 2 percent slopes | Very limited | Drummer, drained 94% Ponding Depth to saturated zone Shrink-swell Harpster, drained 3% Ponding Depth to saturated zone Shrink-swell Peotone, drained 3% Ponding Depth to saturated zone Shrink-swell |
| 193B | Mayville silt loam, 2 to 5 percent slopes | Somewhat limited | Mayville 90% Depth to saturated zone Shrink-swell Slope |
| 198A | Elburn silt loam, 0 to 2 percent slopes | Somewhat limited | Elburn 93% Depth to saturated zone Shrink-swell |
| 206A | Thorp silt loam, 0 to 2 percent slopes | Very limited | Thorp 95% Ponding Depth to saturated zone Shrink-swell |
| 219A | Millbrook silt loam, 0 to 2 percent slopes | Very limited | Millbrook 90% Depth to saturated zone |
| 344C2 | Harvard silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Harvard 92% Slope Shrink-swell |
| 348C2 | Wingate silt loam, 5 to 10 percent slopes, eroded | Somewhat limited | Wingate 92% Slope Shrink-swell |
| 442A | Mundelein silt loam, 0 to 2 percent slopes | Somewhat limited | Mundelein 92% Depth to saturated zone Orthents, loamy 1% Shrink-swell |
| 618E | Senachwine silt loam, 12 to 20 percent slopes | Very limited | Senachwine 90% Slope Shrink-swell Casco 6% Slope Elpaso 2% Ponding Depth to saturated zone Shrink-swell Herbert 2% Depth to saturated zone Shrink-swell |

| Map symbol | Map unit name | Rating | Component name and % composition Rating reasons |
|------------|--|------------------|---|
| 656B | Octagon silt loam, 2 to 4 percent slopes | Somewhat limited | Octagon 92% Shrink-swell |
| 656C2 | Octagon silt loam, 4 to 6 percent slopes, eroded | Somewhat limited | Octagon 92% Slope Shrink-swell |
| 662B | Barony silt loam, 2 to 5 percent slopes | Somewhat limited | Barony 92% Shrink-swell |
| 663A | Clare silt loam, 0 to 2 percent slopes | Somewhat limited | Clare 92% Shrink-swell |
| 668B | Somonauk silt loam, 2 to 5 percent slopes | Somewhat limited | Somonauk 92% Shrink-swell |
| 802B | Orthents, loamy, undulating | Somewhat limited | Orthents, loamy 92% Shrink-swell |
| 969E2 | Casco-Rodman complex, 12 to 20 percent slopes, eroded | Very limited | Casco, eroded 53% Slope Rodman, eroded 37% Slope |
| 3076A | Otter silt loam, 0 to 2 percent slopes, frequently flooded | Very limited | Otter 90% Ponding Flooding Depth to saturated zone |

CONTACTS

Federal Agencies

U. S. Army Corps of Engineers
Regulatory Branch
231 S LaSalle Street, Suite 1500
Chicago, Illinois 60604
(312)846-5330
<http://www.usace.army.mil>

**U.S.D.A. Natural Resources
Conservation Service**
2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3
<http://www.il.nrcs.usda.gov/>

U.S. Fish & Wildlife Service
Chicago Illinois Field Office
230 South Dearborn Suite 2938
Chicago, IL 60604
(847)298-3250
<http://www.fws.gov/>

U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
(312)353-2000 or (800)621-8431
[http://www.epa.gov/region5/
r5hotline@epa.gov](http://www.epa.gov/region5/r5hotline@epa.gov)

State Agencies

Illinois Department of Natural Resources
1 Natural Resources Way
Springfield, Illinois 62702-1271
(217)782-6302
<http://dnr.state.il.us/>

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-3397
<http://www.epa.state.il.us/>

Illinois Department of Transportation
2300 South Dirksen Parkway
Schaumburg, Illinois 62764-0001
(217)782-7820/(800)452-4368
<http://www.idot.illinois.gov/>

Illinois Natural History Survey
1816 South Oak Street MC652
Champaign, Illinois 61820
(217)333-6880
<http://www.inhs.uiuc.edu/>

County Offices

Kane County
Government Center
719 South Batavia Ave.
Geneva, IL 60134
(630)232-3400

<http://www.countyofkane.org/>

Development Department
(630)232-3492

Department of Environmental Management
(630)208-5118

Forest Preserve District
1996 South Kirk Road, Suite 320
Geneva, IL 60134
(630)232-5980
forestpreserve.countyofkane.org

Health Department
1240 North Highland Avenue
Aurora, IL 60506
(630)208-3801

**KANE-DUPAGE
SOIL AND WATER CONSERVATION DISTRICT**

**LAND USE OPINION
18-107E**



December 3, 2018

**Prepared for:
Village of Sugar Grove**

**Petitioner:
Crown Community Development
1751 A West Diehl Road
Naperville, IL 60563**

Petitioner: Crown Community Development, 1751 A West Diehl Rd, Naperville, IL 60563

Contact Person: Daniel J. Olsem, 630-851-5490

Unit of Government Responsible for Permits: Village of Sugar Grove

Acreage: 113.67

Property Address/PIN#: 4S341 Merrill Road, Sugar Grove

Existing Land Use: Agriculture

Surrounding Land Use: Agriculture

Proposed Land Use: Residential/Commercial

Natural Resource Concerns

Land Cover in the Early 1800's: This site is located in an area previously identified as prairie. (See page 2 for more information.)

Kane County Green Infrastructure Plan: This site is located in an area indicated as Park Preserves and Conservation Area (with buffer), Environmental Resource Area (with buffer). (See page 3.)

Wetlands: The National Wetland Inventory map and the ADID wetland map do not identify wetland areas on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of any wetlands. (See page 4 & 5 for more wetland information.)

Floodplain: There are no floodplain areas identified on this site. (See page 6.)



Floodplain

No Floodplain

Streams: There are no streams on this site. (See page 7.)

Regulations: Please note that additional permits are required for any development impacting wetlands, streams or floodplain areas. Please see page 8 for regulation information.

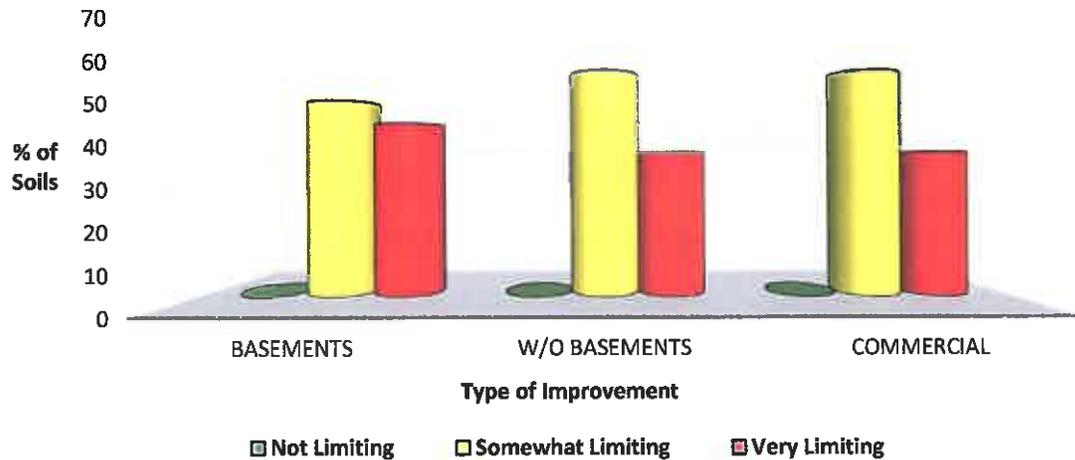
Aquifer Sensitivity: This site is classified as having a moderately high to moderately low potential for aquifer contamination. (See page 9.)

Topography and Drainage: Please refer to page 10 for information regarding site topography and drainage.

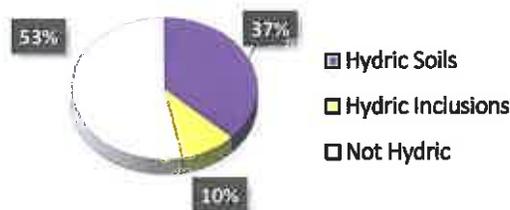
Stormwater: See page 12 for information regarding stormwater management.

Soil Erosion: Any development on this site should include a soil erosion and sediment control plan. (See page 12.)

Building Limitations: Soils at this site may contain limitations for dwellings with basements, dwellings without basements, and small commercial buildings. See page 14 and attached Soils Tables located on the final pages this report. All information is from the Soil Survey of Kane County, Illinois.



Hydric Soils: There are hydric soils and soils with hydric inclusions identified on this site. (See page 15.)



LESA-Prime Farmland: Sites with a score of 26-33 or greater on the Land Evaluation (LE) portion of the LESA score are considered to have high value farmland soils. This site has a score of 30 placing it within the definition of high value soils/prime farmland. (See Page 16 for more information.)

LAND USE OPINION

Land Use Opinion: The most current natural resource data indicates the following concerns for this site: **Soil Limitations, LESA – Prime Farmland, Soil Erosion and Sediment Control, and Stormwater Management.** Based on the information in this report, it is the opinion of the Kane-DuPage Soil and Water Conservation District Board that this site **may not be suited** for land use change **unless** the previously mentioned concerns are addressed.

SITE INSPECTION

A site inspection was conducted by Resource Assistant, Jennifer Shroder on November 29, 2018. The following photos were taken during this inspection and reflect the site conditions at that time.



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PURPOSE AND INTENT

This report presents natural resource information to officials of the local governing body and other decision makers. Decisions concerning variations, amendments or relief of local zoning ordinance may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands because of these decisions may reference this report. This report is a requirement under the Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report intends to present the most current natural resource information available in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other. This information comes from standardized data, on-site investigations and other information furnished by the petitioner.

Please read the entire report to coordinate and interrelate all natural resource factors considered. This report, when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county.

The conclusion of this report in no way indicates the impossibility of a certain land use. However, it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Please direct technical questions about data supplied in this report to:

Kane-DuPage
Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175
Phone: (630) 584-7960

LAND COVER IN THE EARLY 1800'S

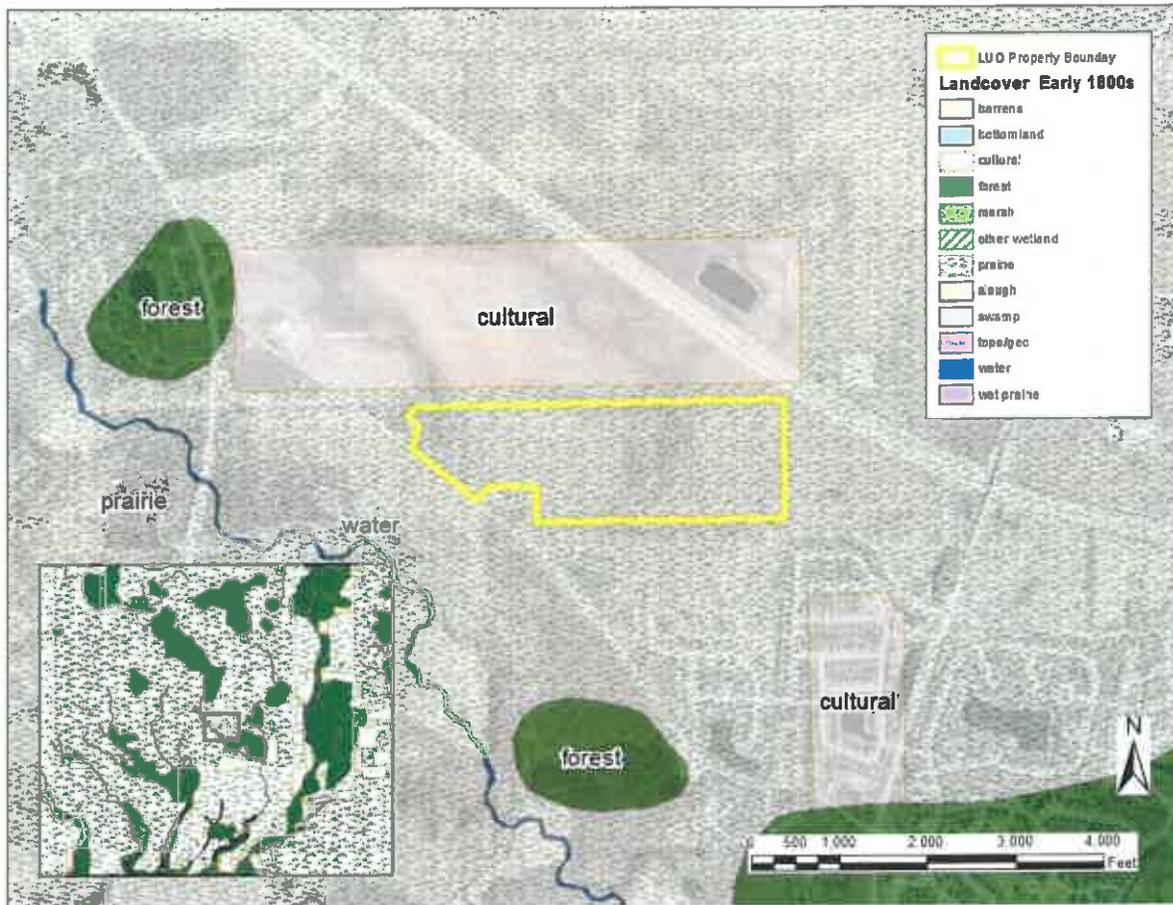


Figure 1: Land Cover in the Early 1800's

Illinois Department of Natural Resources, Illinois Natural History Survey, *Land Cover of Illinois in the Early 1800s.*, Vector Digital Data, Version 6.0, August, 2003.

These surveys represent one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. They predate our county land ownership maps and atlases. These plat maps and field notebooks contain a wealth of information about what the landscape was like before the flood of settlers came into the state.

The vast majority of the landscape of Illinois in the early 1800's consisted of two different natural resource areas. These two areas were prairie and forest. Prairie and woodland ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities

- improve soil health and reduce soil loss
- improve air and water quality

Other designations include, cultural (or agricultural area), marsh, wet prairie, wetland, barrens and water. Please note that these designations are based on surveys taken in the early 1800's, and may not represent exact site conditions.

This site is located in an area surveyed as prairie on the land cover in the early 1800's map. The District recommends preserving as much as of the natural character of the site as possible during this land use change. It is also recommended that native plants be utilized for landscaping whenever possible. Removal of invasive species is also encouraged.

GREEN INFRASTRUCTURE

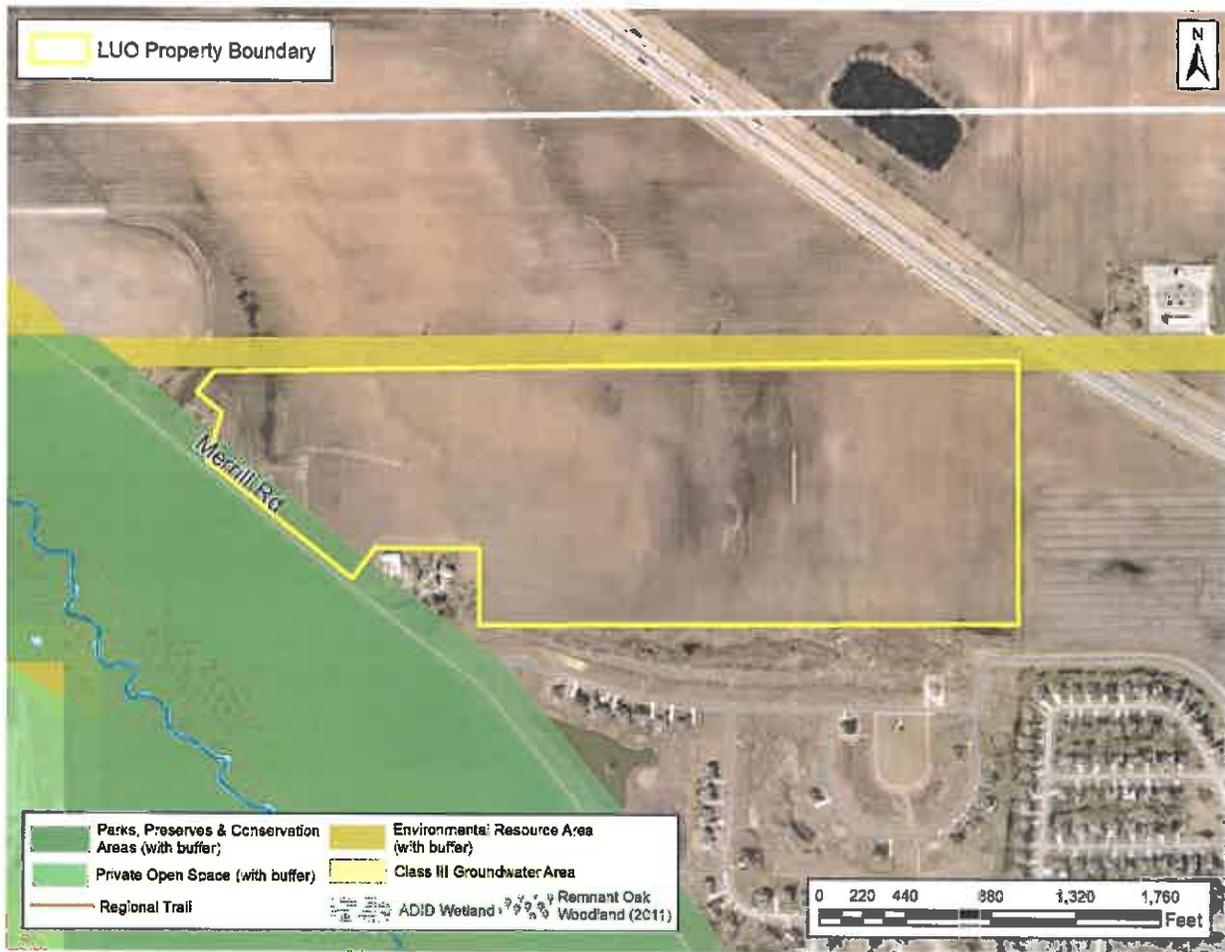


Figure 2: Kane County Green Infrastructure Plan

County of Kane. “Kane County 2040 Green Infrastructure Plan”. Adopted December 10, 2013.

From the Kane County Green Infrastructure Plan, “Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County 2040 Green Infrastructure Plan includes analysis of existing natural resources in the County and recommendations for green infrastructure priorities and approaches. The ultimate goal of the Kane County 2040 Green infrastructure Plan is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood and site levels.”

The benefits of green infrastructure include:

- Preservation of habitat and biodiversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority areas as designated on the Kane County 2040 Green Infrastructure Plan: Park Preserves and Conservation Area (with buffer), Environmental Resource Area (with buffer).

NWI WETLANDS



Figure 3: National Wetland Inventory Map

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Photo Year 1983-1984, Digitized 1985-1986.

Wetlands are some of the most productive and diverse ecological systems on earth. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Some other common wetlands located in this part of Illinois are fens and wet meadows.

Wetlands function in many ways to benefit mankind. Some of their many functions and benefits include:

- Controlling flooding by offering a slow release of excess water downstream or through the soil.

- Cleansing water by filtering out sediment and pollutants.
- Functioning as rechargers of our valuable groundwater.
- Providing essential breeding, rearing, and feeding grounds for many species of wildlife.

A review of the National Wetland Inventory Map indicates that wetlands do not appear to exist on this site. In the event that any indications of wetlands are identified on this site during the proposed land use change, a wetland delineation specialist who is recognized by the U.S. Army Corps of Engineers should determine the exact boundaries and value of these wetlands. Please see page 8 for wetland regulation information.

ADID WETLANDS



Figure 4: ADID Wetlands

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Released in August of 2004, the Kane County Advanced Identification of Aquatic Resources (or ADID) study is a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in the county. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This infor-

mation can be used by federal, state, and local governments to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration, acquisition, or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the full Kane County ADID study at : <http://dewprojects.countyofkane.org/adid/index.htm>

A review of the Kane County ADID map revealed that no ADID wetlands were not identified on this site.

FLOODPLAIN

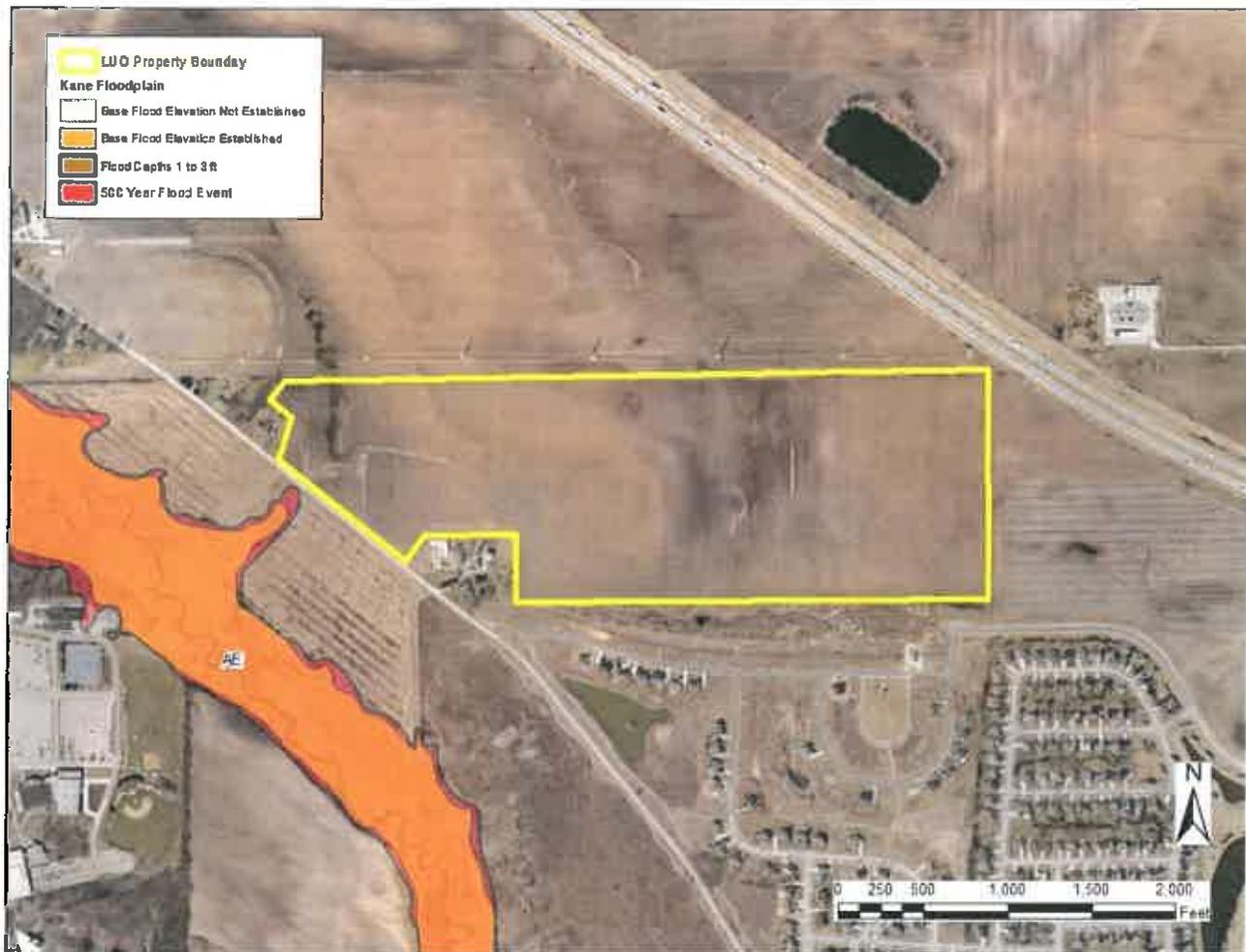


Figure 5: Floodplain Map

Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.

From FEMA's Floodplain Natural Resources and Functions Chapter 8, "Undeveloped floodplain land provides many natural resources and functions of considerable economic, social and environmental value. Nevertheless, these and other benefits are often overlooked when local land-use decisions are made. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment."

There are so many benefits of the floodplain that not all can be listed here, but the following is a general list of benefits and functions:

- natural flood storage and erosion control
- water quality maintenance
- groundwater recharge
- nutrient filtration
- biological productivity/wildlife habitat
- recreational opportunities/aesthetic value

According to the Flood Insurance Rate Map, no part of this site is within the boundaries of a 100-year floodplain. This development should not impede the beneficial functions of the floodplain. Please see 8 for information regarding floodplain regulations.

STREAMS AND WATERSHED MANAGEMENT

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA– Nonpoint Source Pollution).

The Illinois Environmental Protection Agency provides the following in regards to nonpoint source pollution, “Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of or sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification.”

Local watershed management planning is an important effort that involves citizens of a watershed in the protection of their local water resources. Water quality is a reflection of its watershed.

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage

- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

There are many subwatershed plans that have already been developed in Kane County. Please follow the link to the Kane County 2040 Green Infrastructure Plan. See page 108 for a list of local watershed plans.

<http://countyofkane.org/FDER/Pages/development/planning.aspx>

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a “dead zone” located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois’s Plan for reducing nutrient loss here:

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy/index>

REGULATORY INFORMATION

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat As well as recreational resources. Unregulated use of waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

REGULATORY AGENCIES:

Wetland/U.S. Waters: U.S. Army Corps of Engineers, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312) 353-6400.

<http://www.lrc.usace.army.mil/>

Wetland/Isolated: Kane County Water Resources Division, 719 Batavia Avenue, Geneva, IL 60134. (630)232-3400.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/water.aspx>

Floodplains: Illinois Department of Natural Resources\Office of Water Resources, 2050 W. Stearns Road, Bartlett, IL 60103. (847)608-3100.

<https://www.dnr.illinois.gov/WaterResources/Pages/Permit%20Programs.aspx>

Who Must Apply:

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, floodplain or floodway subject to State or Federal regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

NPDES General Construction Permit ILR10: Illinois Environmental Protection Agency, Division of Water Pollution Control, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794. (217)782-0610.

<http://www.epa.illinois.gov/topics/forms/water-permits/storm-water/construction/index>

Coordination: We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate/compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stage. This could reduce time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

AQUIFER SENSITIVITY



Figure 6: Aquifer Sensitivity Map

Dey, W.S., A.M. Davis, and B.B. Curry 2007, *Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS*

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as “a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer.”

Aquifers function as a storage area for groundwater recharge, which makes them a reliable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. This site is classified as having a moderate high to moderately low potential for contamination.

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

| | | | |
|-----------|---|-----------|---|
| A1 | Aquifers are greater than 50ft thick and within 5ft of the surface | C1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| A2 | Aquifers are greater than 50ft thick and between 5 and 20ft below the surface | C2 | Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface |
| A3 | Aquifers are between 20 and 50ft thick and within 5ft of the surface | C3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface |
| A4 | Aquifers are between 20 and 50ft thick and between 5 and 20ft below the surface | D1 | Aquifers are greater than 50ft thick and between 20 and 50ft below the surface |
| B1 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface | D2 | Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface |
| B2 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface | D3 | Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface |
| E1 | Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface | | |

TOPOGRAPHY AND DRAINAGE

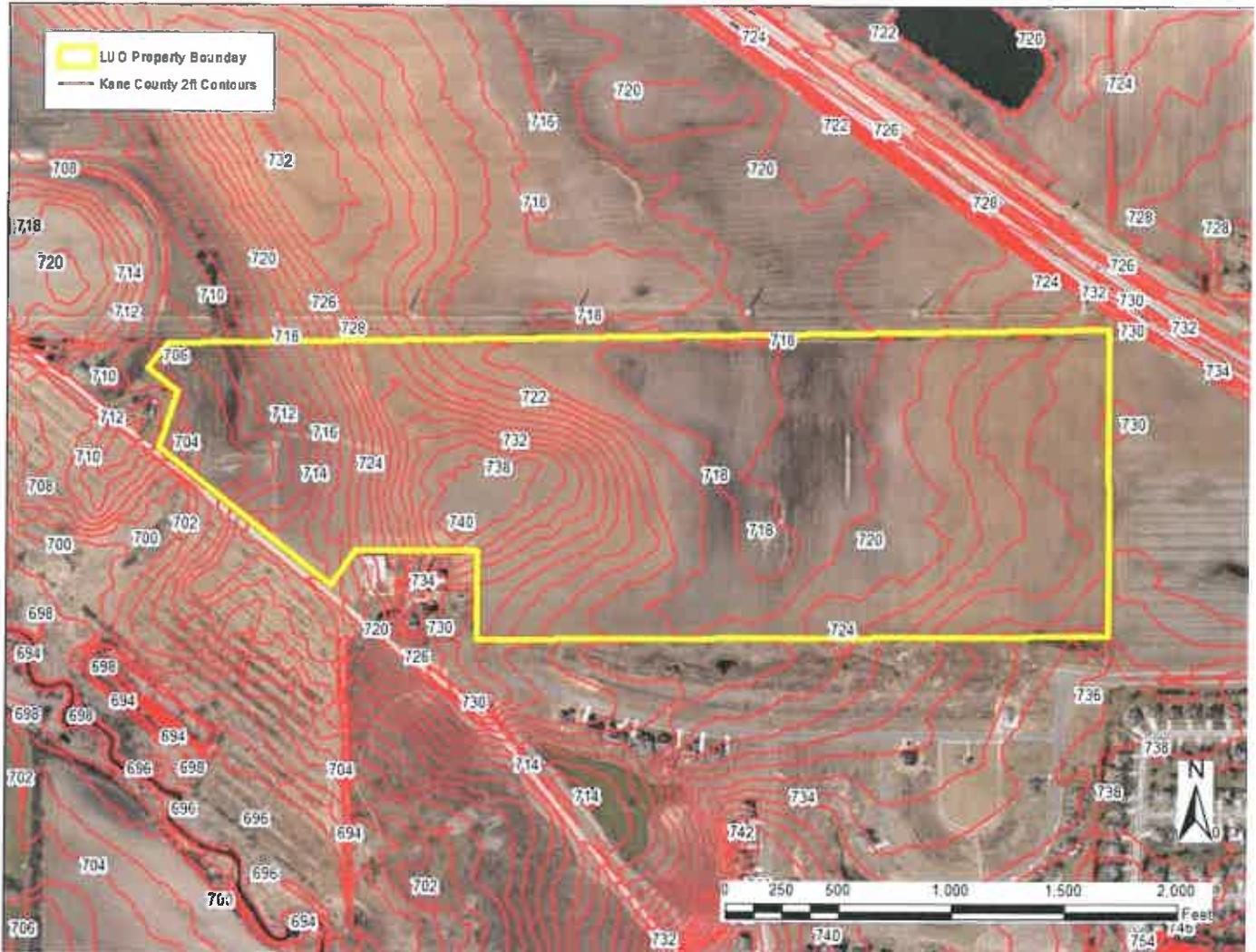


Figure 7: Municipalities 2 Ft Contours

USGS Topographic maps and other topographic surveys give information on elevations, which are important to determine slopes, natural drainage directions, and watershed information. Elevations determine the area of impact of flooding. Slope information determines steepness and erosion potential of the site. Slope has the greatest impact in determining the erosion potential of a site during construction activities. Drainage directions determine where water leaves the property in question, possibly impacting surrounding natural resources.

It is important to consider drainage during any proposed construction onsite. Any areas where water leaves the site should be monitored for potential pollutants which could contaminate downstream waters.

The high point of this property is located in the center of the site at an elevation of approximately 740 feet above mean sea level. The property generally drains in all directions via overland. The lowest elevation on the property is approximately 702 feet above sea level.

TOPOGRAPHY AND DRAINAGE

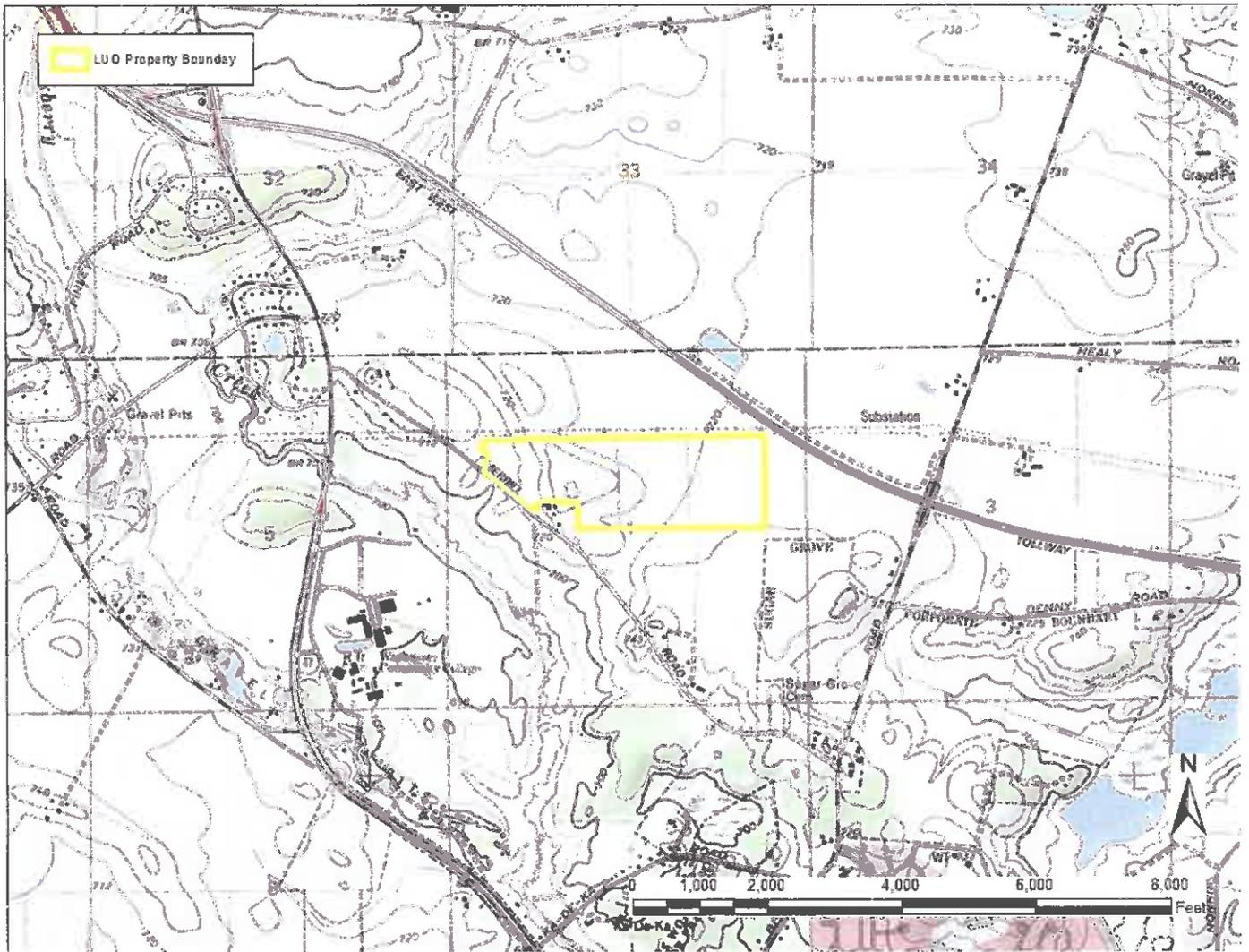


Figure 8: USGS Topographic Map

STORMWATER

Any proposed removal of vegetation, compaction of soil, and addition of impervious surfaces (rooftops, roadways, etc.) will greatly increase the amount of stormwater runoff generated on this site. The District recommends the use of onsite stormwater management strategies whenever possible. IEPA now recommends that stormwater pollution prevention plans include post-construction stormwater management which retains the greatest amount of post-development stormwater runoff practicable, given the site and project constraints. From the ILR10 permit for construction sites 1 acre or more, "Such practices include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open

vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices)."

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

<http://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources/>

SOIL EROSION

Development on this site should include the use of a soil erosion and sedimentation control plan. Due to the soil type and slope of the site, the District believes that the potential for soil erosion during and after any proposed construction could be **large**. Furthermore, the erosion and resulting sedimentation may become a **primary** nonpoint source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

Erosion and sedimentation control measures include: 1) staging the construction to minimize the amount of disturbed areas present at the same time, 2) maintaining or planting vegetative groundcover, and 3) keeping runoff velocities low.

Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois.

SOILS INFORMATION

IMPORTANCE OF SOILS INFORMATION

Soils information is taken from the Soil Survey of Kane County, Illinois, United States Department of Agriculture, Natural Resource Conservation Service. This information is important to all parties involved in determining the suitability of the proposed land use change.

SOIL MAP UNITS

The soil survey map of this area (Figure 1) indicates soil map units. Each soil map unit has limitations for a variety of land uses such as septic systems, and buildings site development, including dwellings with and without basements. All of the soils contain **very limiting** conditions for building site development. **See Soils Interpretations section and attached Soil Tables.**

The Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of Kane County, Illinois. The soils were mapped at a scale of 1:12,000. The enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of the mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

LIST OF SOIL MAP UNITS

| SOIL MAP UNIT | PERCENT OF PARCEL | ACRES |
|--------------------------------|----------------------|---------------|
| 59A—Lisbon | 2% | 2.32 |
| 62A—Herbert | 2% | 2.03 |
| 152A—Drummer | 33% | 37.53 |
| 171A—Catlin | 17% | 18.90 |
| 198A—Elburn | 6% | 6.87 |
| 206A—Thorp | 4% | 4.23 |
| 348B—Wingate | 16% | 18.34 |
| 348C2—Wingate | 8% | 9.61 |
| 527C2—Kidami | 1% | 1.49 |
| 656B—Octagon | 3% | 3.10 |
| 656C2—Octagon | 8% | 9.25 |
| Table 1: Soil Map Units | Total | 113.67 |

All percentages and acreages are approximate.

We suggest that a geotechnical engineer conduct an on site investigation. This should determine, specifically, what soils type is present at a particular location, along with its associated limitations or potential for a particular use. It will also assist in determining which types of engineering procedures are necessary to account for the limitations of the soil on the site.