

Upper South Branch Kishwaukee

Watershed Characteristics Assessment, Part 1

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Key Discussion Topics

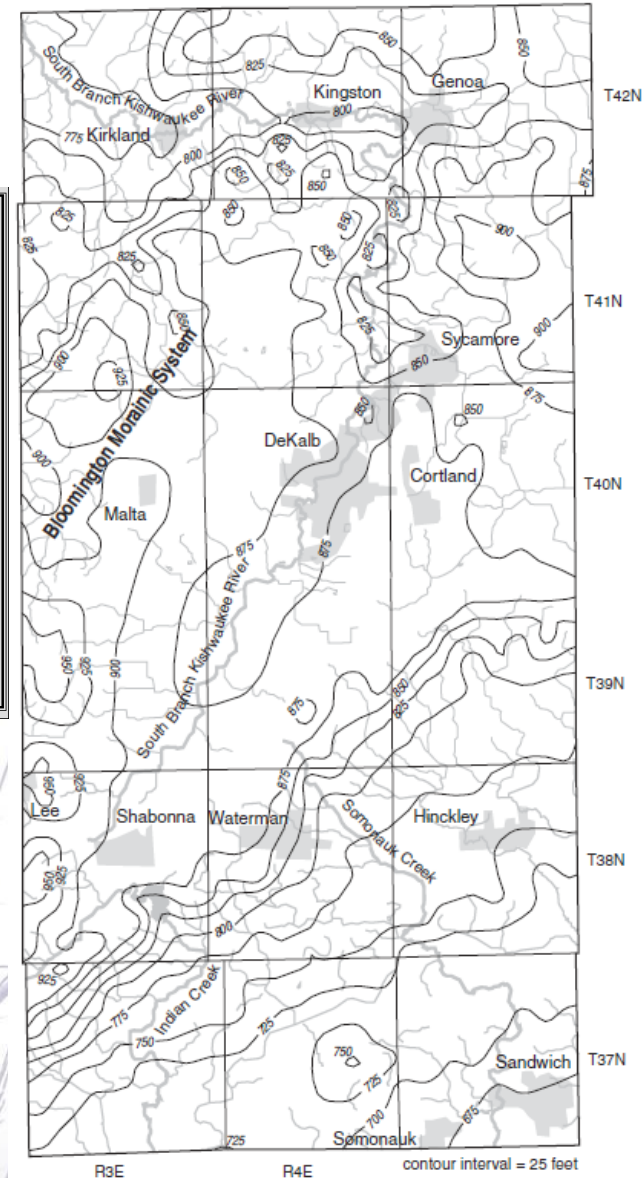
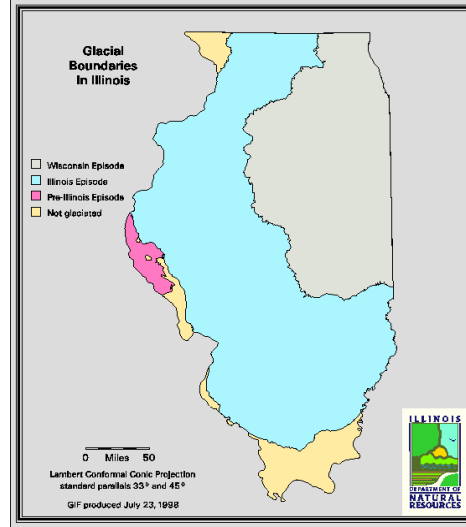
- Geology
- Pre-Settlement Conditions
- Topography
- Subwatersheds
- Soils
- Jurisdictions & Demographics
- Code & Ordinance Review

Source: Google



Geology

- The geology dates back 9,500 years to end of Late Wisconsin Glaciation.
- Nearby Bloomington Morainic System created during retreat of Wisconsin glacier
- Later erosion carved out the South Branch Kishwaukee River valley



Early History

- Last Native American Indian tribe to call area home was Potawatomie, until treaty in 1833
- Kishwaukee River originally known as the Sycamore River
- “Kishwaukee” from Indian word for “sycamore tree”
- DeKalb originally named Huntley's Grove after Russell Huntley, owner of largest claim where DeKalb now sits
- First settlers were John Collins and Norman Moore (1835)
- Railroad built through and platted in 1853



Early History

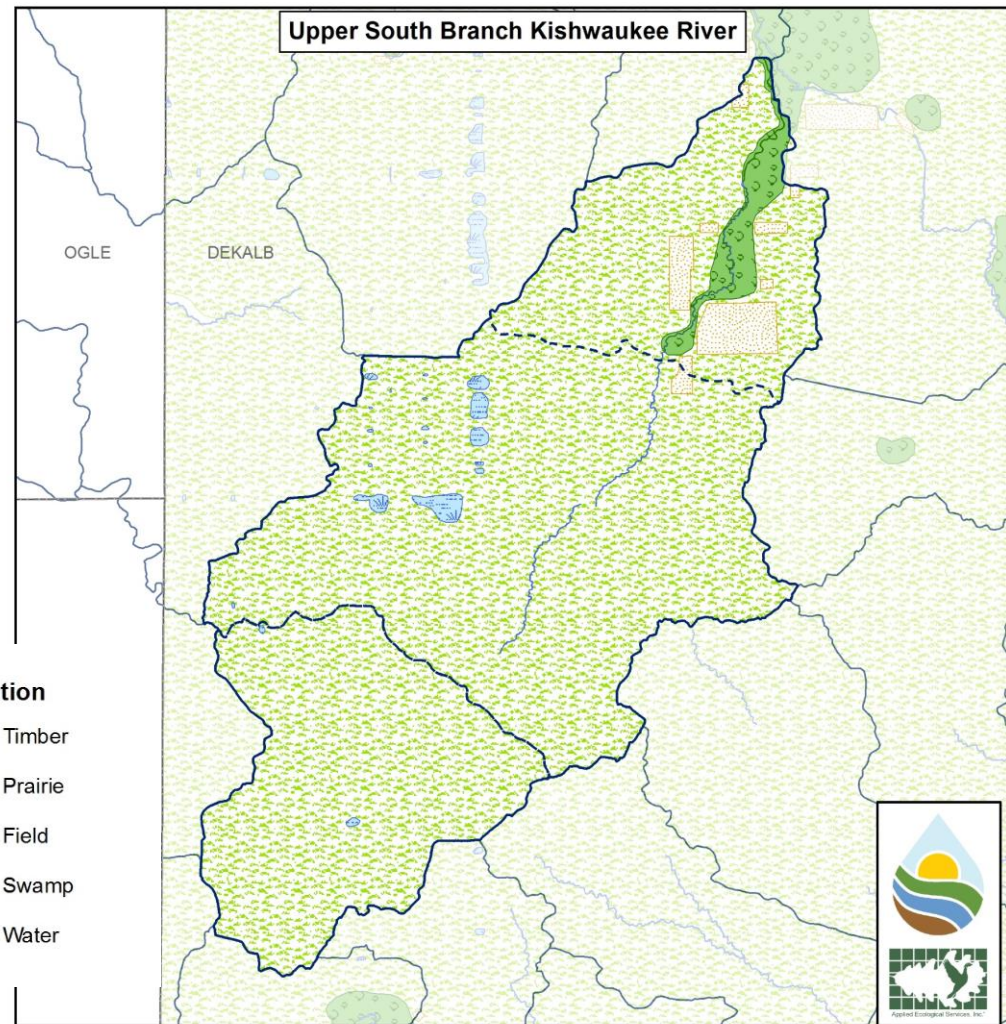
“The surface of the town, like the remainder of the County, is mostly occupied by handsome rolling prairie; but, unlike some others, it is favored with a handsome stream, the head waters of one branch of the Kishwaukee, and is liberally supplied with timber from an extensive grove bordering this stream, formerly known far and wide as Huntley's Grove.”

– Boies, 1868

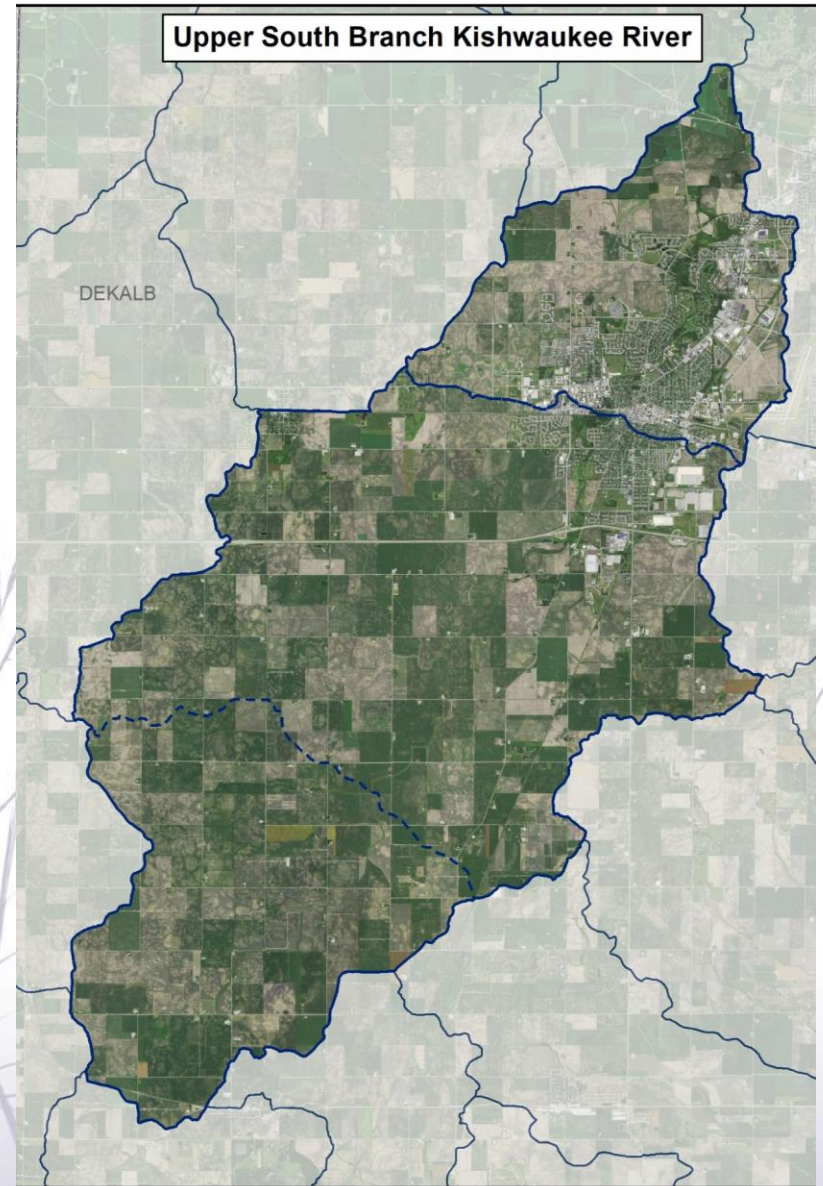
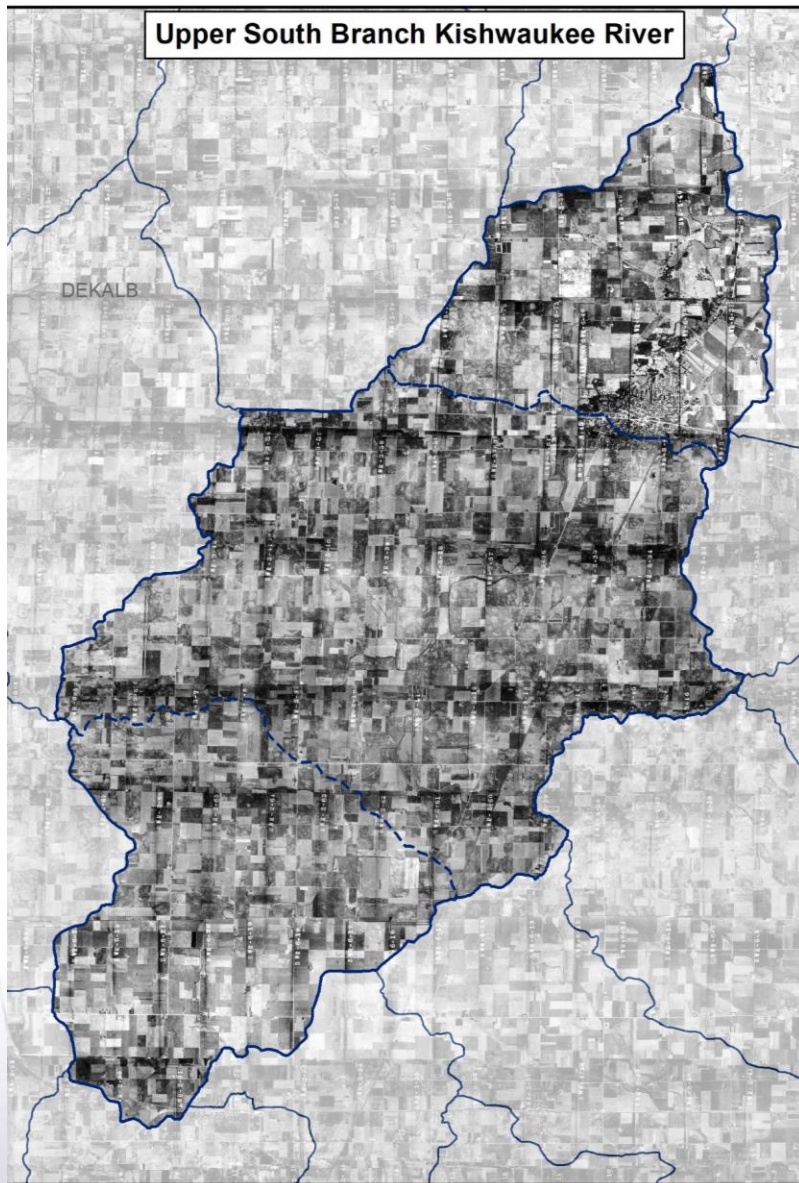


Pre-Settlement Landscape (1842)

- Vast majority of watershed was “Prairie”
- Stretches of “Timber” along the main stem of the Kishwaukee near DeKalb
- Few pockets of “Marsh” scattered throughout
- Some fields already cleared for farming



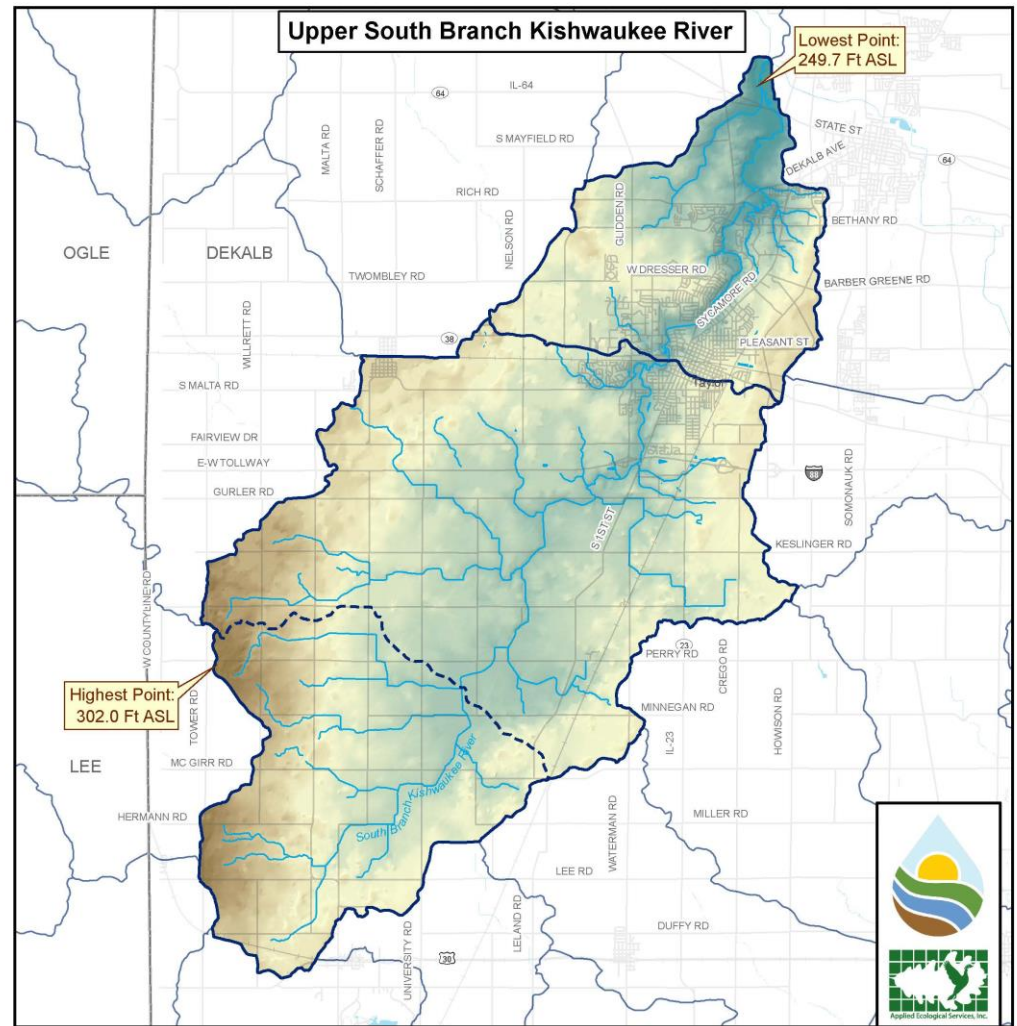
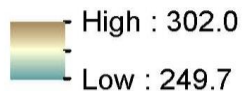
Historic (1939) & Current Aerial (2017)



Digital Elevation Model

- Water flows north and east from south and western edges to outlet north of DeKalb
- 63,219 acres or 99 square miles
- Very flat! Only 52 feet of relief

Elevation Feet Above Sea Level (ASL)



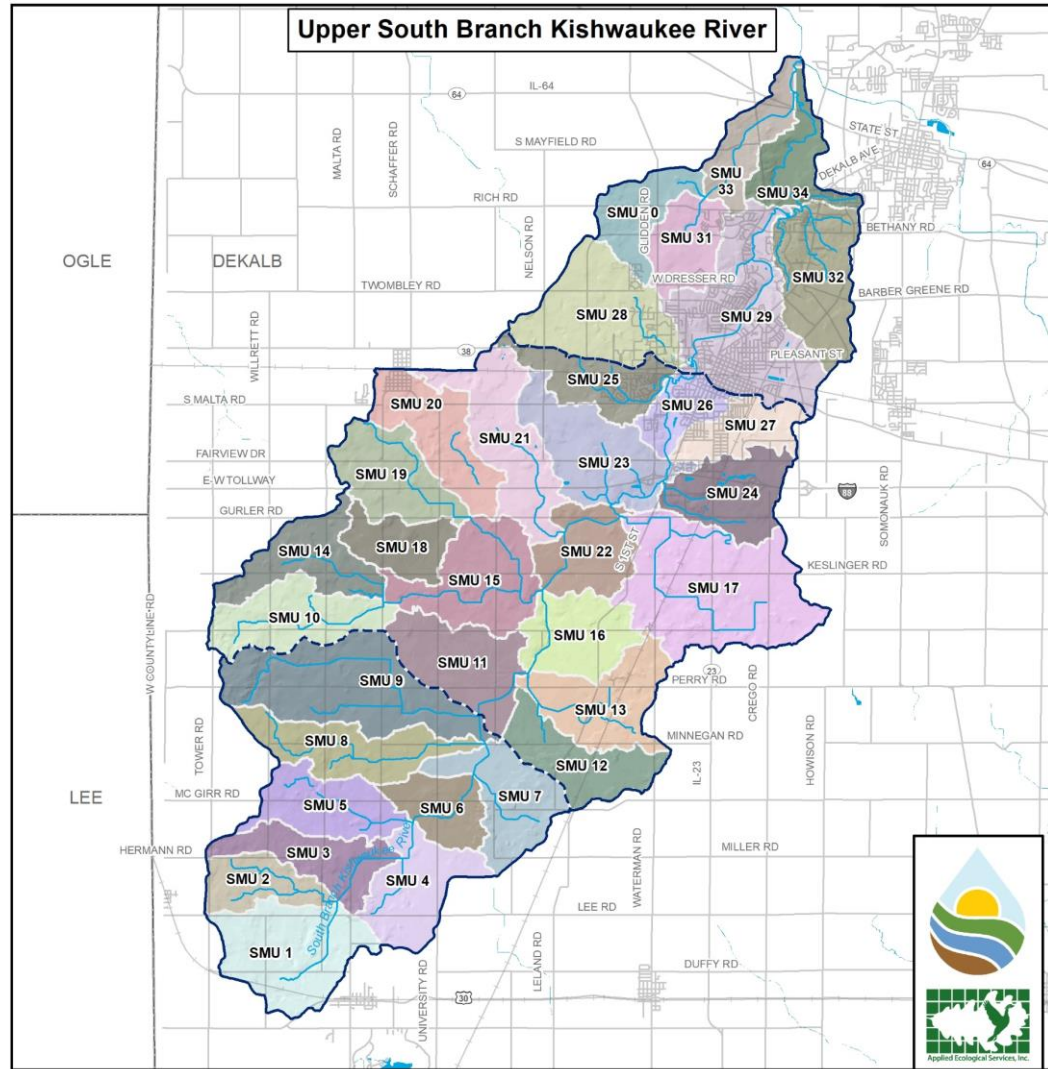
Subwatershed Management Units (SMUs)

Total of 34 SMUs

Range in size from 901
to 4,124 acres

Created as more
detailed analysis of
smaller drainage areas

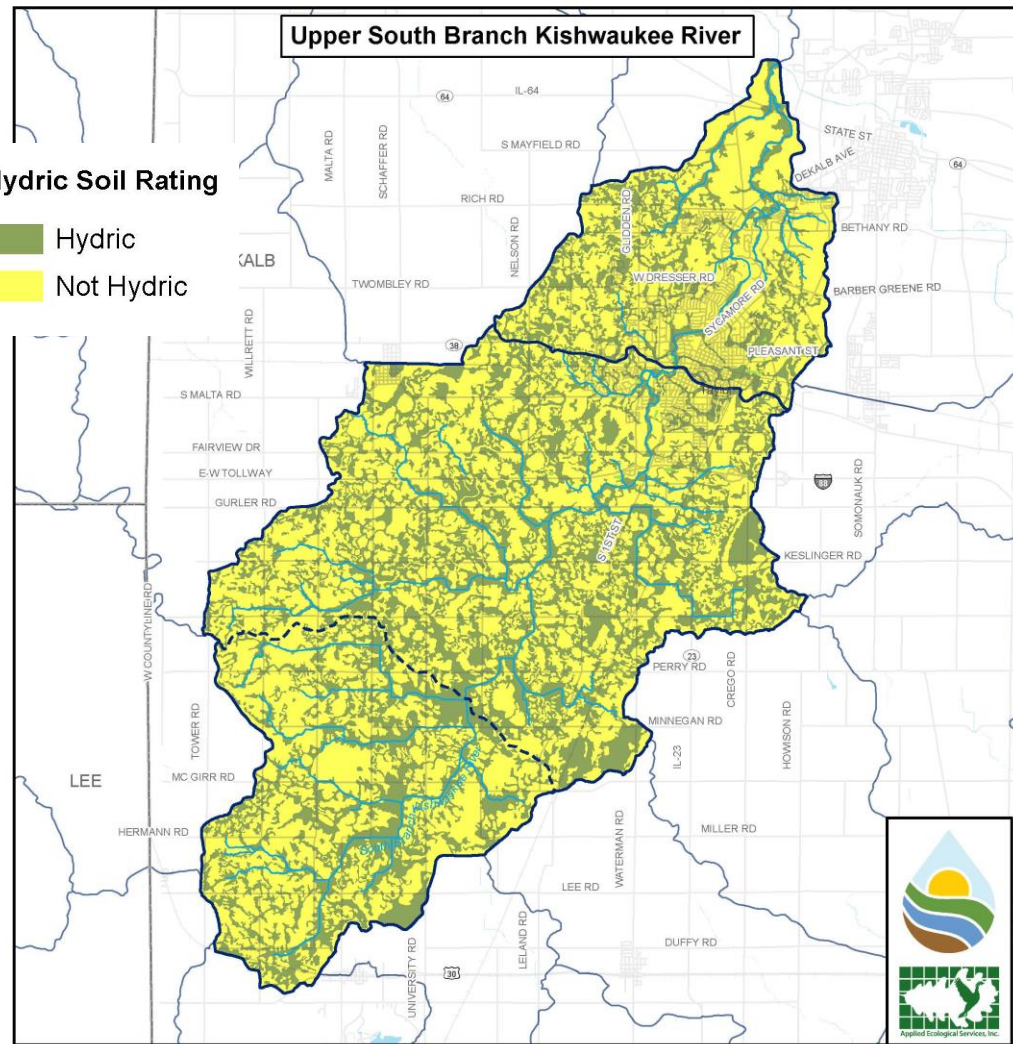
Will help point out
Critical Areas



Hydric Soils

Historically there were approximately 25,734 acres of wetlands (or hydric soils)

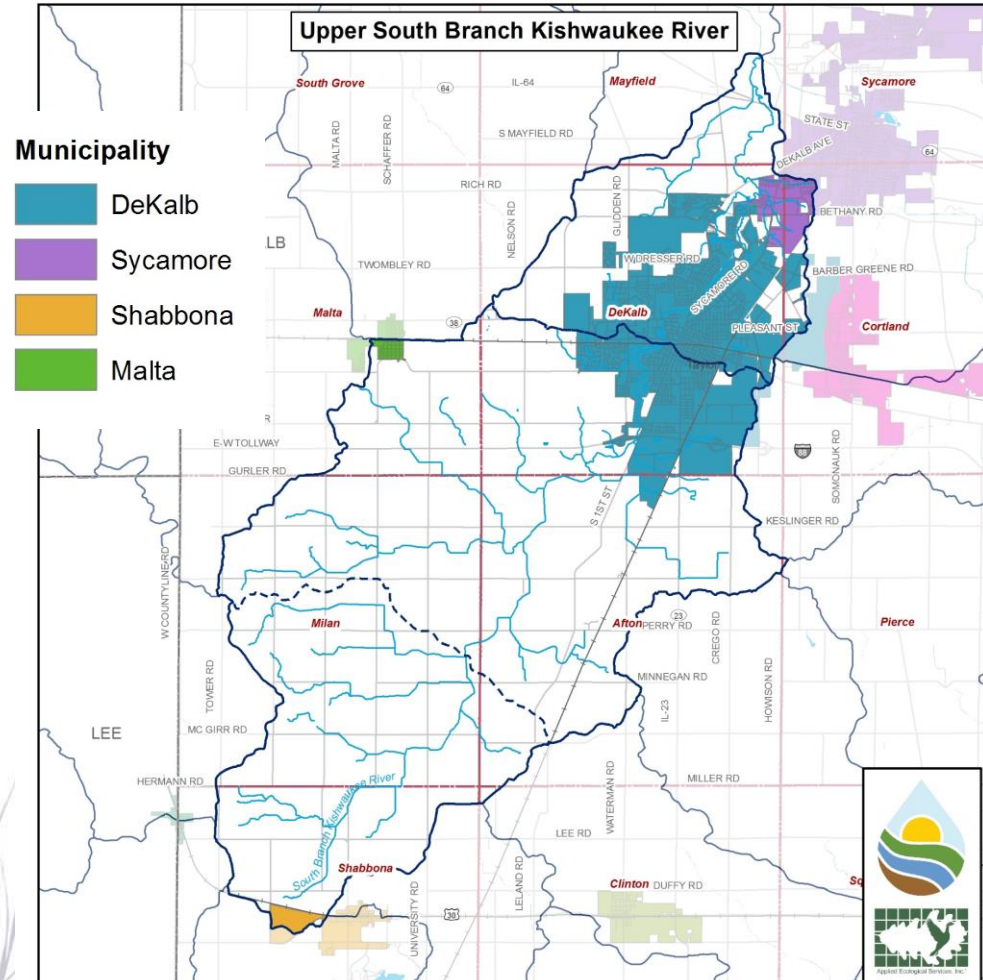
1,570 acres of pre-settlement wetlands, or 6%, remain



Jurisdictions

Entirely within DeKalb Co.

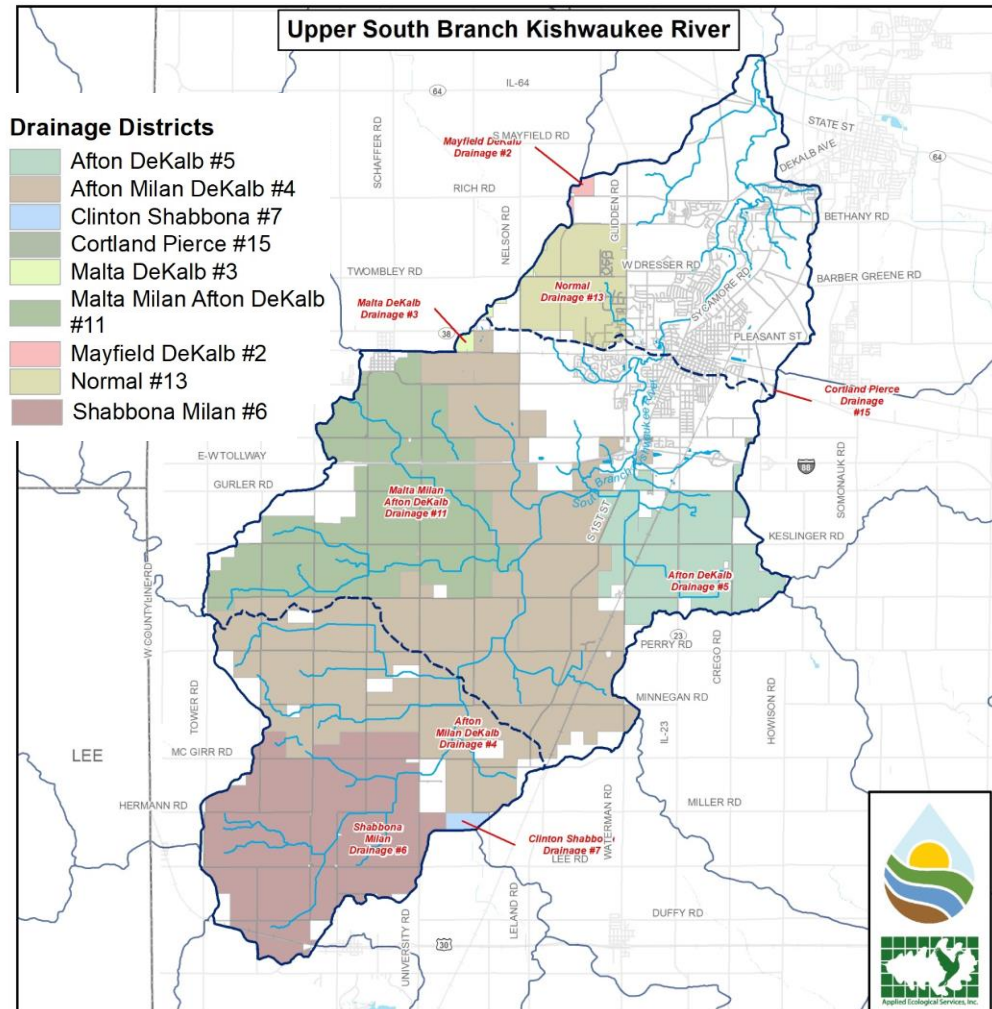
Jurisdiction	Area (acres)	% of Watershed
County	63,219.1	100
DeKalb	63,219.1	100
Unincorporated Township Areas	52,530.7	83
Unincorporated Milan Township	17,469.7	27.6
Unincorporated Afton Township	13,339.7	21.1
Unincorporated DeKalb Township	9,857.4	15.5
Unincorporated Shabbona Township	5,419.3	8.6
Unincorporated Malta Township	4,292.2	6.8
Unincorporated Mayfield Township	1,845.7	2.9
Unincorporated Cortland Township	251.8	<1
Unincorporated Clinton Township	48.4	<1
Unincorporated Clinton Township	6.3	<1
Unincorporated Clinton Township	0.2	<1
Municipalities	10,688.4	17
DeKalb	9,585.4	15.3
Sycamore	752.0	1.2
Shabbona	217.1	<1
Malta	133.9	<1



Drainage Districts

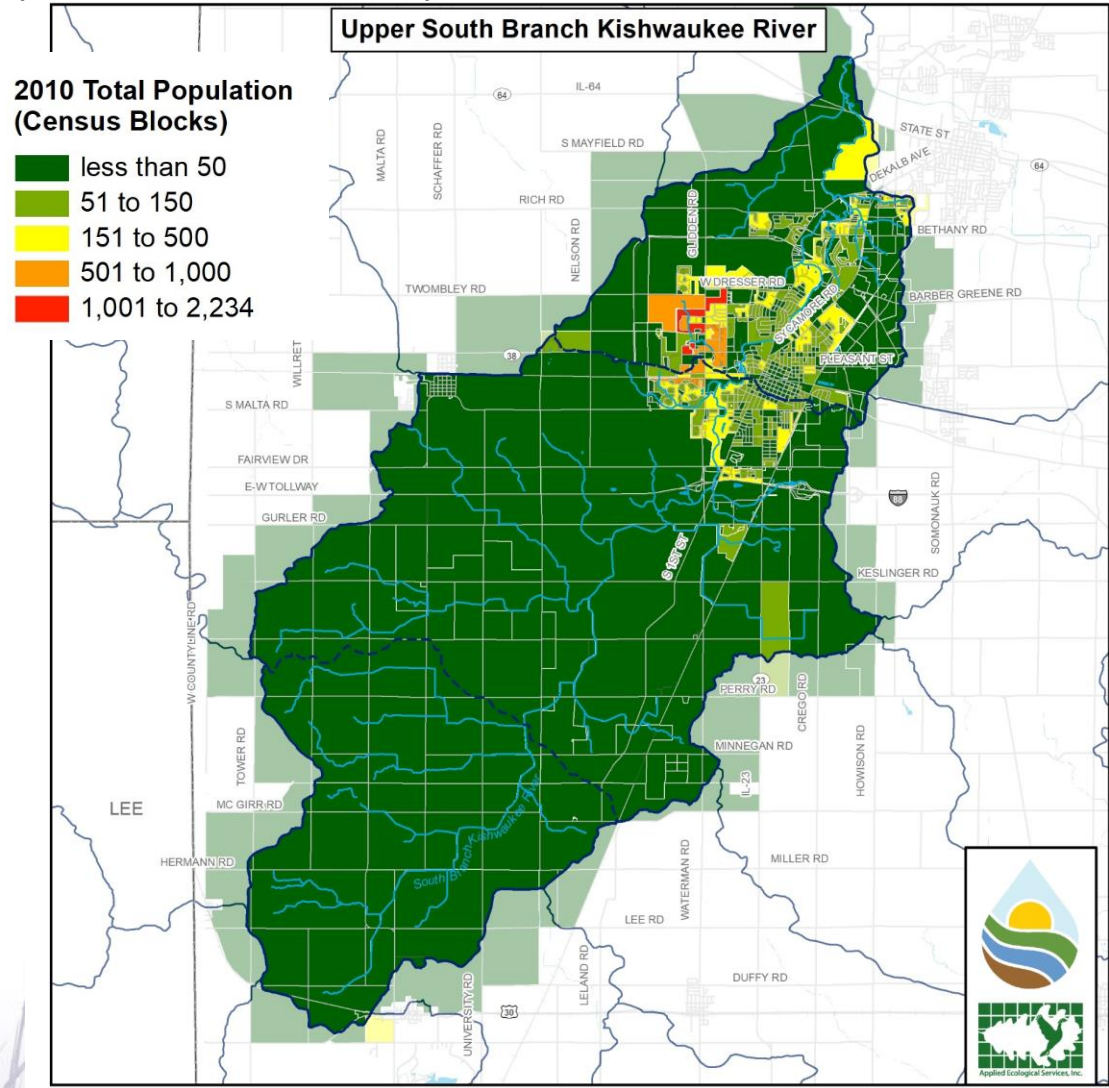
- Local bodies that manage draining, ditching, and improving land for agriculture and sanitary purposes
- 9 in total

Drainage District	Acres
Afton Milan DeKalb Drainage #4	18,180.3
Malta Milan Afton DeKalb Drainage #11	8,879.0
Shabbona Milan Drainage #6	8,539.3
Afton DeKalb Drainage #5	4,179.1
Normal Drainage #13	2,362.1
Malta DeKalb Drainage #3	414.8
Clinton Shabbona Drainage #7	152.0
Mayfield DeKalb Drainage #2	102.4
Cortland Pierce Drainage #15	16.7



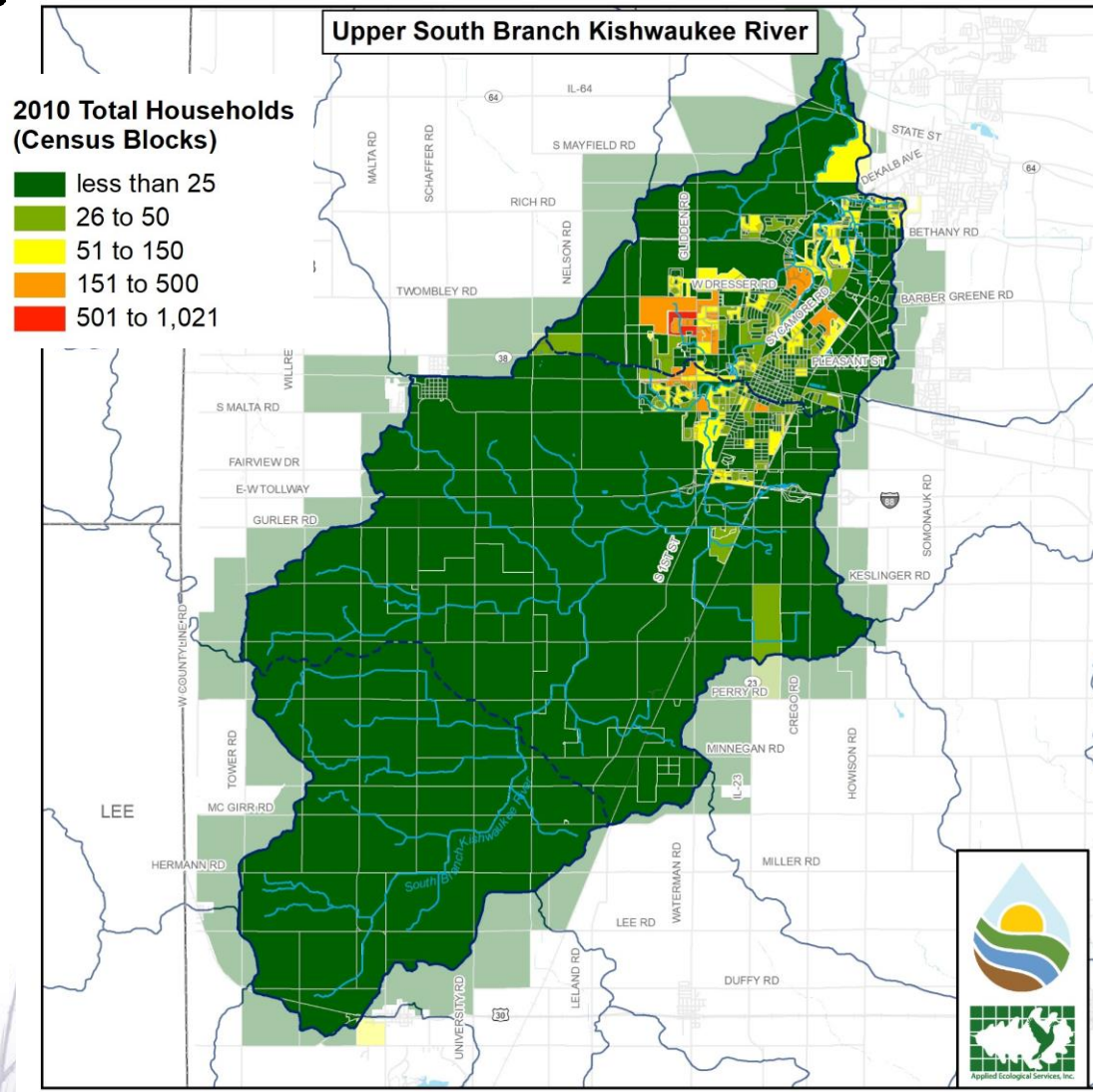
Demographics - Population

- According census data, the population in 2010 was roughly 50,539.
- Slight overestimation due to limits of census block data.
- IDPH estimate puts 2025 population at roughly 61,000.



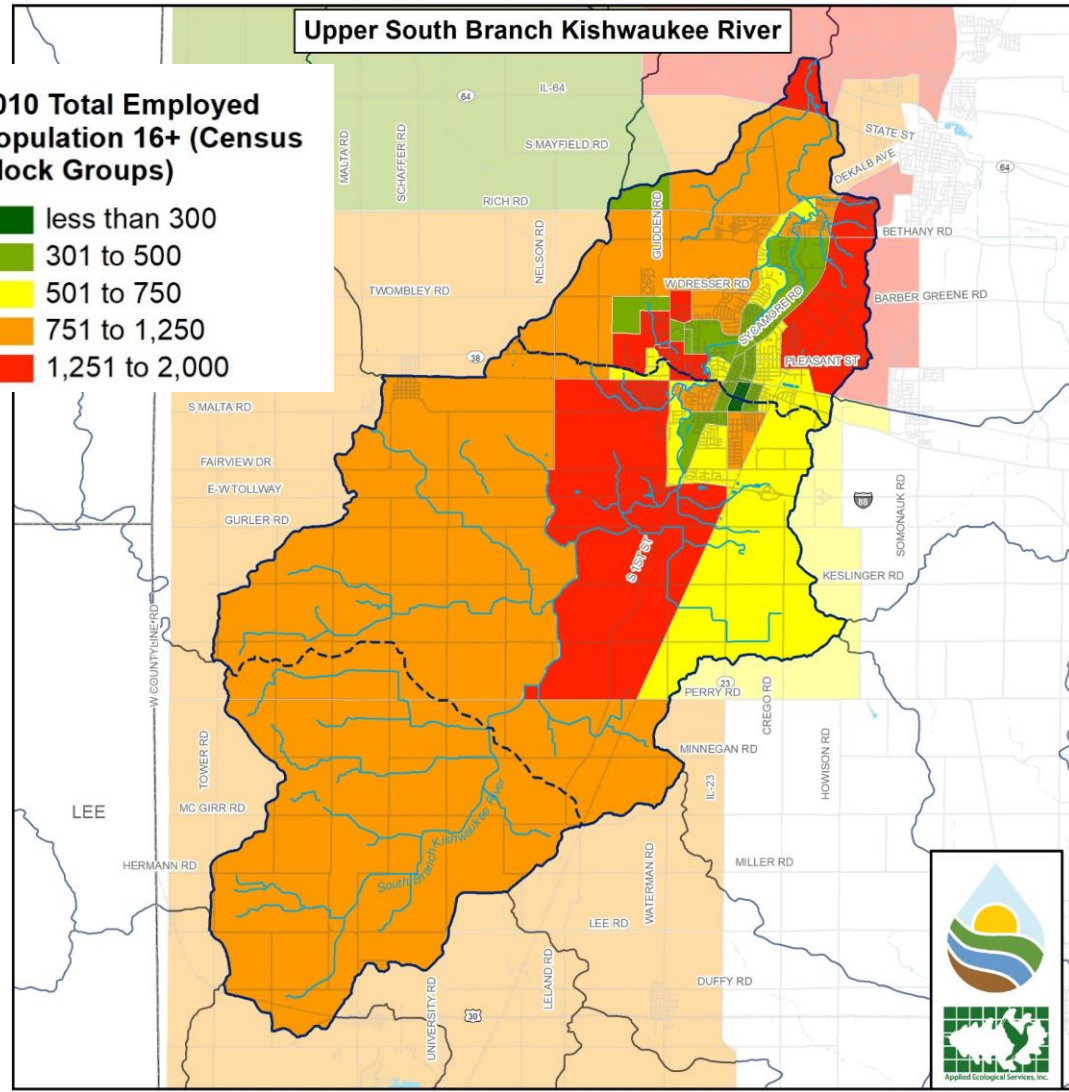
Demographics - Household

- According census data, the number of households in 2010 was roughly 18,290.
- Slight overestimation due to limits of census block data.
- No household projection data.



Demographics - Employment

- According census data, the employed population in 2010 was roughly 32,335.
- Overestimation due to limits of census block group data.
- No employment projection data.



Ordinance Review

Plan includes narrative on the environmental protections at the federal and state level, such as:

- Clean Water Act (federal)
- NPDES permitting (state)

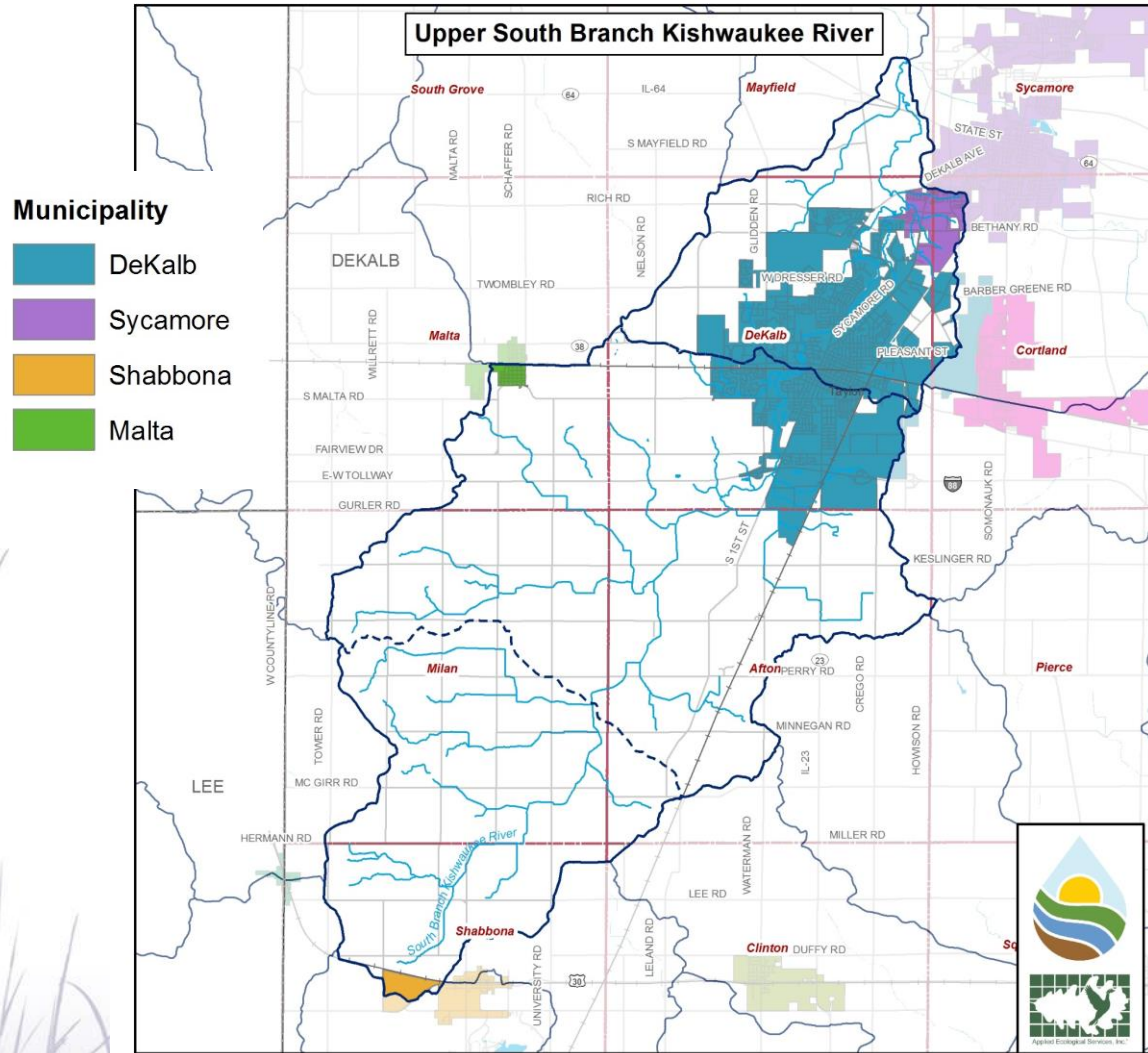
Must assess county and municipal ordinances:

- Stormwater regulation (county)
- Compare ordinances against a standard
- Strengths
- Weaknesses



Jurisdictions

- DeKalb County
- City of DeKalb
- Sycamore
- Shabbona
- Malta



Municipal Ordinances

Municipal regulation has the ability to be the most protective

Can include:

- Environmental regulations
- Zoning ordinance
- Subdivision codes
- Stormwater management or drainage criteria
- Buffer or floodplain regulations
- Tree protection or landscaping ordinances



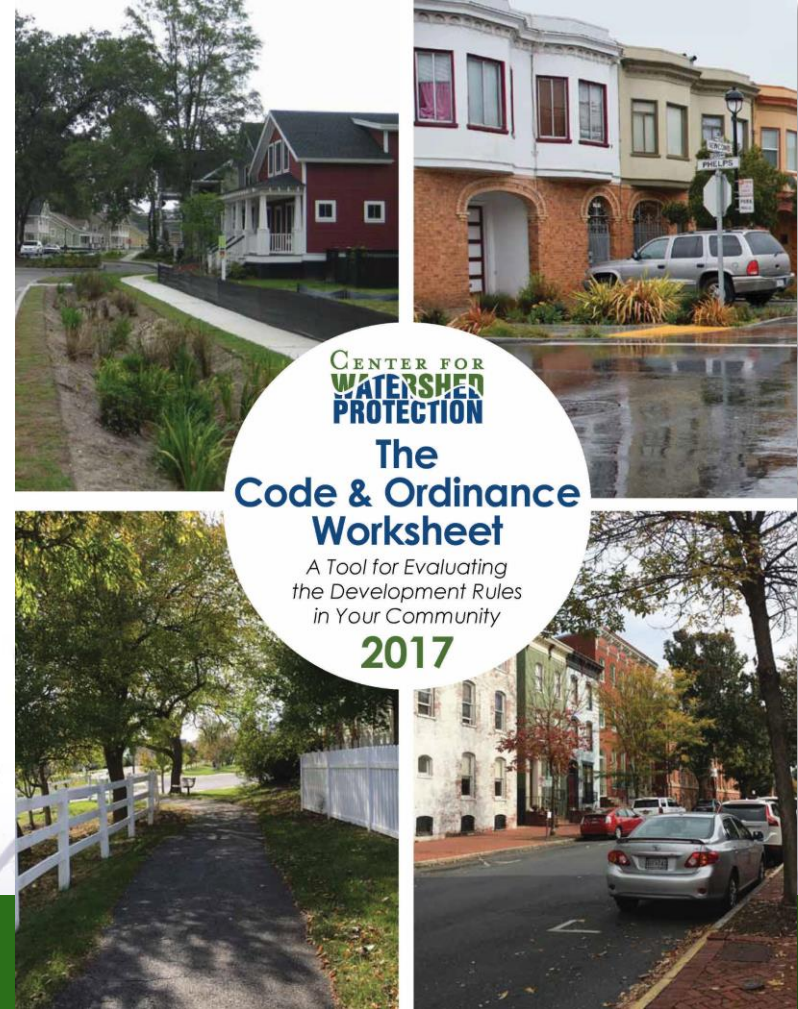
Center for Watershed Protection

The Code & Ordinance Worksheet: A Tool for Evaluating Development Rules in Your Community (CWP, 2017)

Step 1: Find out what the development rules are in your community

Step 2: See how your rules stack up to the model development principles

Step 3: Consider changing some local development rules



Center for Watershed Protection

Four categories:

- Residential Streets & Parking Lots
- Lot Development
- Conservation of Natural Areas
- Runoff Reduction

Rural Form is best fit



Residential Streets & Parking Lots

- Street Width
- Street Length
- Right-of-Way Width
- Cul-de-Sacs
- Vegetated Open Channels
- Parking Ratios
- Parking Codes
- Parking Lots
- Structured Parking
- Parking Lot Runoff

		Question	Yes	No	N
Code Area					
Street Width					
	1	Is the minimum roadway width allowed for streets in neighborhoods with low volume roads (less than 400 average daily trips according to AASHTO, 2001) between 18-22 feet (where bicycle lanes are not present)?			
	2	Are curb extensions that narrow the roadway (such as pinchpoints, gateways, and chicanes) permissible?			
	3	Are permeable paving materials allowable on low-use streets and/or parking lanes?			
Street Length					
	4	Does the subdivision, Planned Unit Development, or Unified Development ordinance identify reducing street length as a goal of neighborhood street design?			
Right-of-Way Width					
	5	Is the recommended right-of-way width for a low-volume residential street less than 45 feet?			
	6	Does the code allow utilities to be placed under the paved section of the right-of-way to limit clearing and allow compact development footprint?			
	7	If street trees are required, is the planting area required to be at least 6 feet to provide sufficient rooting space to support large			
Cul-de-Sacs					
	8	Do the street or subdivision standards allow street layouts that minimize the use of cul-de-sacs?			
	9	Is the minimum radius for cul-de-sacs 48 feet or less?			
	10	Can a landscaped island be created within the cul-de-sac?			
		<i>Yes, and the cul-de-sac must be graded to the island with an overflow to the storm drain system, so that it can be used for stormwater treatment (2 pts.)</i>			



Lot Development

- Open Space Design
- Setbacks and Frontages
- Sidewalks
- Driveways
- Open Space Management
- Rooftop Runoff

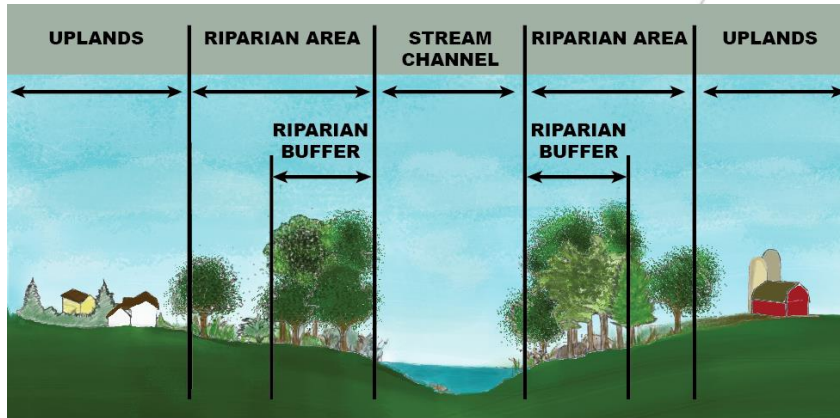


Open Space Design			
31	Do the ordinances require or allow open space subdivisions? <i>Yes, they are required in a designated open space zoning district (2 pts.)</i> <i>Yes, open space designs are an allowable option (through an overlay zone) (1 pt.)</i>		
32	Is land conservation or impervious cover reduction a major stated goal or objective of the open space design ordinance?		
33	Is a minimum percentage of the buildable portion of the site required to be set aside as open space? <i>Yes, at least 50% (2 pts.)</i> <i>Yes, less than 50% (1 pt.)</i>		
34	Is the open space determined through a stepwise design process where open space is identified first?		
35	Is open space design a by-right form of development versus a more burdensome conditional use or warrant?		
36	Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks/lot lines, road widths, lot sizes and shapes)?		
37	Are density bonuses and/or penalties used to encourage use of open space design? <i>Yes, density penalties are given for conventional development. (2 pts.)</i> <i>Yes, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, up to an established maximum. (2 pts.)</i> <i>Yes, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, with no cap on density bonuses. (1 pt.)</i>		
Setbacks and Frontages			
38	Are irregular lot shapes (e.g., pie-shaped, flag lots, zipper lots) allowed in the community?		
39	Does the code allow for variances to setback and frontage requirements?		
Sidewalks			
40	Can minimum sidewalk widths for residential neighborhoods be reduced to 5 feet where safe and appropriate? (2 pts.)		
41	Can alternate pedestrian networks (e.g., paved trails through common areas, walkways and bike trails connecting cul-de-sacs to other streets) be substituted for sidewalks in the right-of-way?		



Conservation of Natural Areas

- Buffer Systems
- Buffer Maintenance
- Clearing and Grading
- Tree Conservation
- Land Conservation Incentives
- Stormwater Outfalls



Buffer Systems			
61	Do the development standards in the community require a vegetated buffer along waterways?		
62	Is the definition of waterway, or the regulated buffer, expansive enough to include (check all that apply):		
	<i>Perennial streams (0.5 pts.)</i>		
	<i>Ephemeral and intermittent streams (0.5 pts.)</i>		
	<i>Lakes (0.5 pts.)</i>		
	<i>Estuaries and shorelines (0.5 pts.)</i>		
	<i>Wetlands (0.5 pts.)</i>		
	<i>Vernal Ponds (0.5 pts.)</i>		
63	Is the minimum buffer width 50 feet or more?		
	<i>Yes, width is 100 feet or greater (2 pts.)</i>		
	<i>Yes, width is between 50-99 feet (1 pt.)</i>		
	<i>No, width is < 50 feet</i>		
64	Are buffer widths greater for sensitive resources (e.g., designated high quality streams) or in certain zones (e.g.,		
65	Is expansion of the buffer to include adjacent wetlands, steep slopes, or the 100-year floodplain required?		
Buffer Management			
66	Does the buffer ordinance specify that a minimum percentage of the buffer be maintained with native vegetation? (2 pts.)		
67	Does the buffer ordinance outline prohibited uses and permitted uses that have little impact to the vegetated buffer?		
68	Does the ordinance specify enforcement mechanisms?		
69	Does the buffer ordinance specify a preference for buffers to be located on a parcel of common ownership (e.g., a homeowners' association)?		
Clearing and Grading			
70	Is there any ordinance that requires the preservation of native soils, hydric soils, natural vegetation, or steep slopes at development sites? (2 pts.)		
71	Do regulations limit the total portion of the site that can be		



Runoff Reduction

- Stormwater Codes
- Installation & Maintenance of Practices
- Off-site Compliance



Stormwater Codes			
86	Do codes define rainwater harvesting and establish acceptable uses for rainwater (e.g., irrigation and toilet flushing) and corresponding treatment requirements?		
87	Does the stormwater code include specific standards to reduce post-construction runoff volume (not just peak rate)?		
	<i>Yes, runoff/volume reduction is required for most new development and redevelopment sites (2 pts.)</i>		
	<i>Yes, the standards apply to some sites or are included as an alternative compliance method (1 pt.)</i>		
88	Does the code require or have incentives for consideration of runoff reduction concepts early in the site planning process?		
	<i>Yes, there are provisions for a pre-application meeting or similar (2 pts.)</i>		
	<i>Yes, but the meetings are not mandatory for applicants (1 pt.)</i>		
89	If the code includes post-construction runoff reduction standards, is there reference to clear, understandable, and local or regionally-based design guidance or stormwater manual?		
	<i>Yes, the code references design guidance or a manual (2 pts.)</i>		
	<i>Yes, such a manual exists but it is not referenced in the code (1 pt.)</i>		
90	Are drainage and stormwater treatment standards all in one place within the code and internally consistent?		
	<i>Yes, codes are consolidated and consistent regarding applicability and methods</i>		
	<i>No, various code sections are conflicting or inconsistent</i>		
Installation and Maintenance of Practices			
91	Do erosion and sediment control standards specify protection of post-construction practice sites during active construction?		
	<i>Yes, erosion control standards include these provisions (2 pts.)</i>		
	<i>Yes, the code is not explicit but it is addressed during plan review (1 pt.)</i>		



Scoring

- Your overall score provides a general indication of your community's ability to support environmentally sensitive development.
- As a general rule, if your overall score is lower than 80%, then it may be advisable to systematically reform your local development rules.
- Final results included in watershed plan document and can be used to measure improvement over time.



Center for Watershed Protection

Necessary for someone familiar with each municipality's ordinances to complete the review.

Letter to administrators explaining worksheet and how to complete it forthcoming.

Dear [NAME],

Protection of natural resources and development of green infrastructure during future urban growth will be important for the future health of the Kishwaukee River and the surrounding watershed. As part of the watershed planning process, an assessment of local municipal ordinances needs to be performed to determine how development is regulated within the area of the overall watershed. In this way, potential improvements to local ordinances can be identified. As part of the assessment, [MUNICIPALITY] will need to compare their local ordinances against the Code and Ordinance Worksheet (Excel Spreadsheet, attached) outlined by the Center for Watershed Protection (CWP) in a publication entitled "*The Code & Ordinance Worksheet- A Tool for Evaluating the Development Rules in Your Community*," (attached).

The Code and Ordinance Worksheet allows an in-depth review of the standards, ordinances, and codes that shape how development occurs in your community. The worksheet consists of a series of questions, listed under the "Rural Form" tab of the spreadsheet, that correspond to model development principles. Points are assigned based on how well the current development rules agree with the site planning benchmarks derived from the model development principles.

CWP's recommended ordinance review process involves assessments of over 23 categories. Various questions with differing point totals are examined under each category. The maximum score is 111. CWP also provides general rules based on scores.

Instructions are listed at the top of the "Rural Form" tab. In short, if yes, mark a "1" in the "yes" column if the ordinance exists. Mark a "2" in the "yes" column if the question is highlighted blue, and a "0.5" if the question is highlighted orange. If the answer is "No" or "N/A", mark an "X" in the corresponding cell. Use the "Notes" column to record details of the code language and reference the relevant code and section, if desired.

Based on the level of detail involved in the worksheet it is necessary for someone familiar with [MUNICIPALITIES] codes and ordinances to complete the worksheet and generate a score. The attached spreadsheet contains questions on the "Rural Form" tab and assigns and tracks points for various regulations as it is completed. Please complete this form and return the spreadsheet to me by May 31st, 2019.

Thank you in advance for taking the time to review how your municipality fares against this worksheet. Your assistance with this task will ensure [MUNICIPALITY] is accurately represented in the watershed plan. If you have any questions or concerns, please don't hesitate to contact me.

Thank you,
Cecily Cunz
Applied Ecological Services
Cecily.cunz@appliedeco.com
773.351.0514



Ordinance Review

Contacts for Ordinance Review:

- DeKalb County
- City of DeKalb
- Sycamore
- Shabbona
- Malta





Questions?



APPLIED ECOLOGICAL SERVICES, INC.